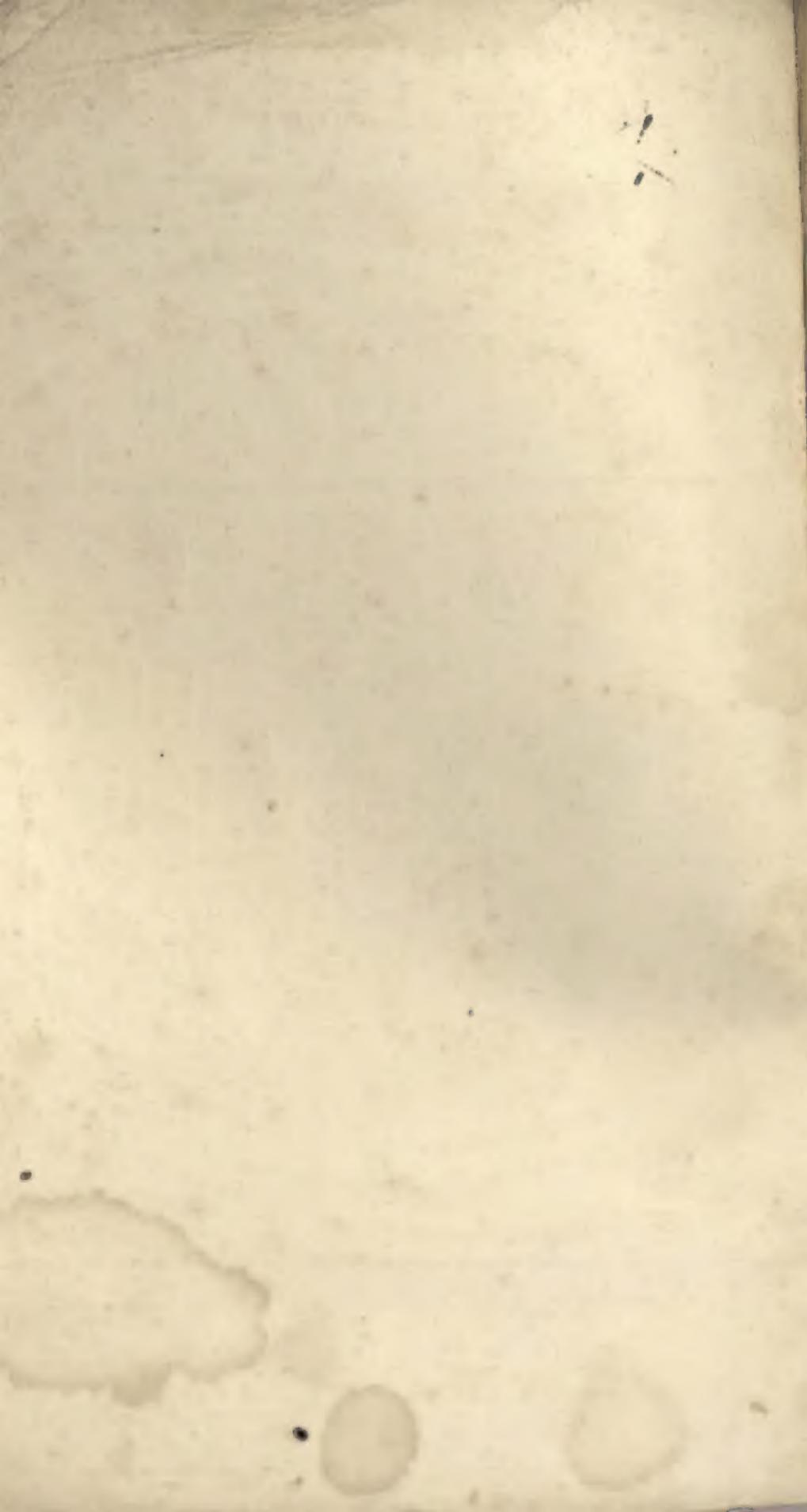


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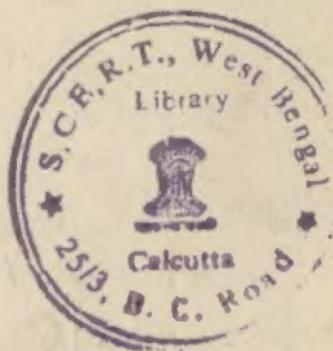
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PSYCHOLOGY

and
its bearing on Education

C. W. VALENTINE, M.A., D.PHIL.
*Formerly Professor of Education in the
University of Birmingham*



THE ENGLISH LANGUAGE BOOK SOCIETY
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METHUEN & CO LTD

First published December 14th, 1950

Reprinted six times

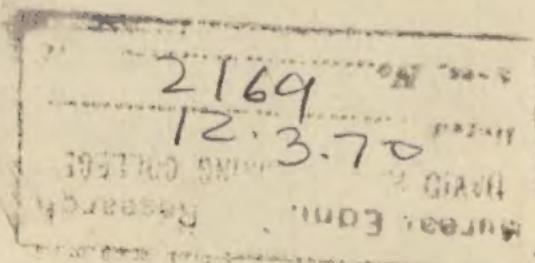
Second edition, revised and with additions, 1960

Reprinted 1963 and 1965

E.L.B.S. edition first published 1965

Printed and bound in Great Britain by

Richard Clay (The Chaucer Press), Ltd., Bungay, Suffolk



S.C.E.R.T., West Bengal

Date 12.3.70.....

Acc. No 2169.....

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PREFACE TO FIRST EDITION

In this book I have aimed above all at five things. First, to be clear; concrete illustrations are given throughout, and technical terms are introduced only where essential, and are explained when they are first used.

Second, I have tried to make the earlier parts of the book as simple and general as possible, gradually introducing the reader to a more detailed discussion of the same topics later, and to the study of more complex problems.

Third, I have stressed points of general agreement among competent psychologists (more especially British psychologists) rather than dwell upon matters of dispute; though I have not hesitated to make clear divergences of views when they are really important, and when we should suspend judgement. There is, however, far greater agreement among *properly qualified* psychologists than is commonly thought.

Fourth, I have aimed at comprehensiveness, and, while seeking to avoid superficiality, tried to introduce the reader to every aspect of psychology which has an important bearing on education. I may perhaps mention specially the attention here given to aesthetic education and the appreciation of beauty in visual art, music, and poetry, which are so often neglected in psychological text-books.

Finally, I have sought to rouse interest in the fascinating study of human nature. In many years' experience in the teaching of psychology, I found that the best way to interest the student was to discuss, in the earliest stages, adult experiences as well as child psychology. This is indeed necessary for a comprehensive psychology; and there are grave dangers if the treatment is scrappy, or narrowly confined to child-study or applications to classroom methods. But in addition to that, we all have our own inner psychological problems of living; and teachers and parents have some of special importance in their dealings with children. We all have our mental conflicts

and difficulties with others; and I find that those parts of psychology which directly bear on these, quickly arouse interest in the student. Hence there is an added reason for discussing problems, not only of conscious motives, but of unconscious influences, of mental health, and of other topics of everyday concern to adults. These have, of course, also their bearing on the understanding of children, as indeed have all the fundamental topics in psychology.

In addition the direct study of children, in all their freshness and naivety – from babyhood to adolescence – has a prominent place in the present volume, and this in itself, will, I hope, add to interest, and, at times, entertainment.

Applications to education and the training of children (including social and moral education) have been discussed throughout. In this I have been especially critical of many ill-founded or facile, rule-of-thumb applications.

The book is so planned that the student, after the introductory chapters, can proceed to a choice of later sections of the book. References for further reading are given throughout.

My warmest thanks are due to Professor Sir Cyril Burt, who, with characteristic kindness, read the whole book in typescript and made many valuable comments. I wish also to thank Major L. B. Birch, Dr J. C. Rohan, and my son Hugh for assistance with the proofs, and my secretary, Mrs D. G. Schatz, for help with both proofs and index.

October 1949.

PREFACE TO 1952 REPRINT

As this reprint was required in less than a year from the appearance of the book, no substantial revision beyond the correction of misprints is called for, or attempted.

"Reviewers have been very kind to me. While some have remarked that the book is rather long, others have suggested additions; and a few notes have been added to some chapters.

C. W. V.

December 1951.

PREFACE TO SECOND EDITION, 1960

The eight reprints of this book included only slight additions and revisions. For this second edition a thorough revision has been made, with attention to researches published more recently, particularly in the chapters on Intelligence and Intelligence Tests and on Educational Guidance.

I have also introduced the reader to various new terms favoured especially by some American psychologists which students may meet in wider reading; but I have shown that these terms often do not introduce quite new ideas but rather cover old ones under a new guise, with perhaps a new emphasis.

I have included a section on experiments on animals showing the limitations of their bearing on the learning process in humans, and several sections on the recent work of J. Piaget, especially in reference to the development of the comprehension of numbers.

C. W. V.

THE WHITE HOUSE,
WYTHALL, NR. BIRMINGHAM.

ABBREVIATIONS USED IN REFERENCE TO JOURNALS

B.J.E.P. = *British Journal of Educational Psychology*

B.J.P. = *British Journal of Psychology*

J. Gen. P. = *Journal of Genetic Psychology*

J. Educ. P. = *Journal of Educational Psychology*

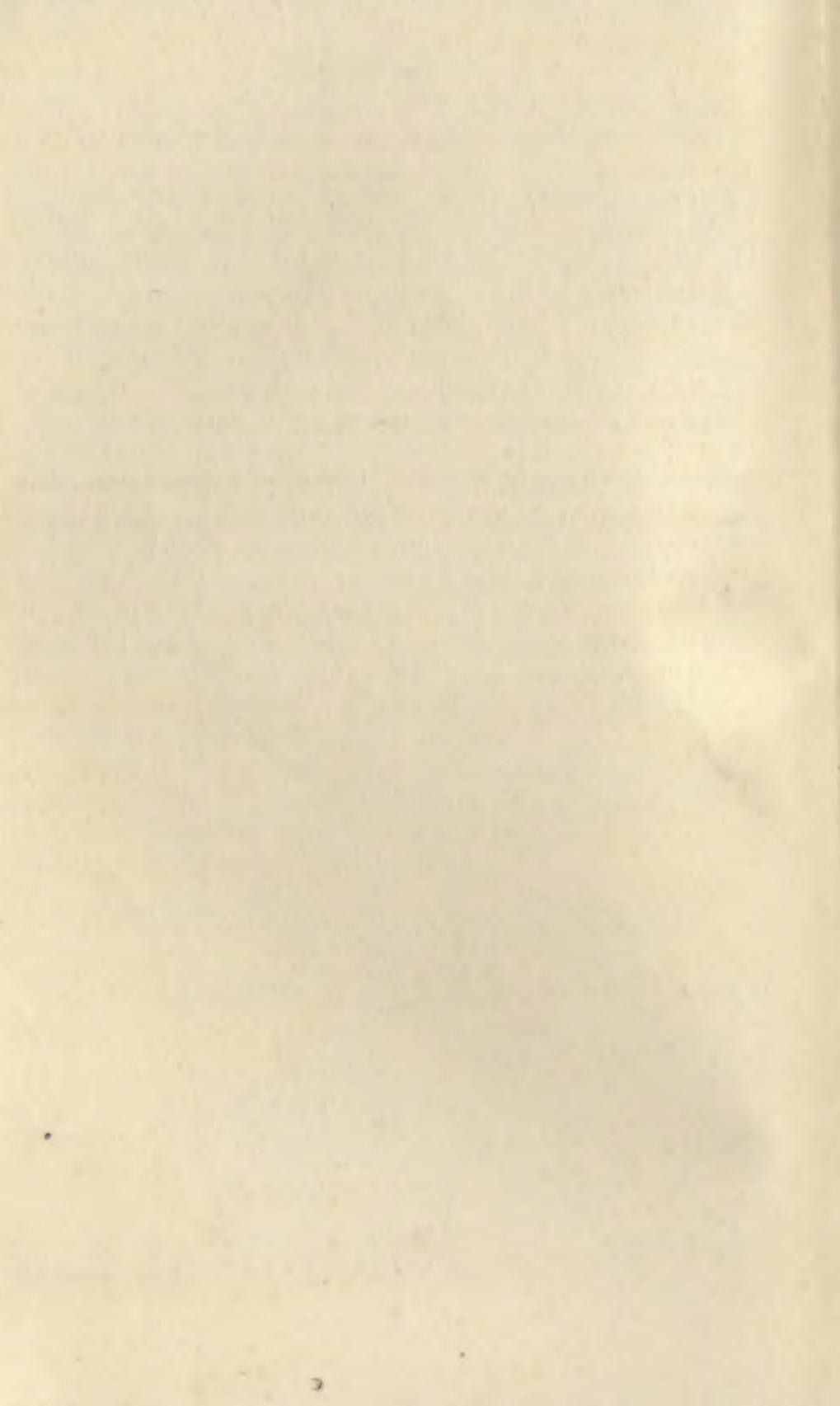
J. Exp. Res. = *Journal of Experimental Research*

J. Exp. Educ. = *Journal of Experimental Education*

J. Exp. Ped. = *Journal of Experimental Pedagogy*

Volume of Journal put in black figures thus: 14.

In reference to ages of children 3 ; 7 = three years and seven months.



CONTENTS

	Page
<i>I. Introduction</i>	I
The scope of this book. What psychology is not. Is psychology of any practical use? (a) Psychology applied to industry; (b) The use of intelligence tests; (c) Vocational guidance tests; (d) Tests in the Army; (e) The cure of minor mental disorders. Psychology as a guide to probabilities. Plan of study for this book.	
<i>II. Supposed Mental Faculties and their Training</i>	12
The supposed 'faculty of memory'. Rote memory and substance memory. Visual and auditory rote memory. Interest and learning. The supposed 'training of memory'. Some practical applications to teaching.	
The supposed 'faculty of observation' and its training. Observation, perception, and apperception. Imagination and its 'training': (a) The forming of mental images; (b) Reproductive imagination; (c) Constructive imagination.	
Attention and the training of attention. Mental discipline and the doctrine of formal training. The need for considering the popular interpretation of psychological terms. The meaning of 'habit'.	
<i>III. The Modern Psychological View of Mental Abilities</i>	32
General intelligence. Special abilities. Innate general ability. Mental age and the intelligence quotient. Distribution of intelligence. The difference between the modern psychology of mental abilities and the 'faculty psychology'.	
<i>IV. Desire and Striving, Pleasure, Emotions and Sentiments</i>	44
Three aspects of mental process. Conation and feeling-tone. Is conation always directed towards pleasure? The emotions. Emotions and sentiments. The development of a sentiment.	

*V. Are there Human Instincts? The Innate Bases
of Conduct and 'Drives'*

53

What is an instinct? Distinction between instincts and reflexes. Instincts and intelligence. The essential qualities of instinctive tendencies in man. 'Instincts' or 'innate tendencies' or 'drives'? Innate tendencies in man resembling instincts. The main clues to innate tendencies. The spread of innate tendencies in man. The modification of innate tendencies by experience. 'Drives' and innate tendencies. Temperament. Anthropological evidence about innate tendencies. The order of discussion of tendencies or drives.

*VI. Sympathy, the Parental Impulse, Fear, and
Disgust*

71

Passive sympathy or sympathetic induction of emotions. Specific elements in passive sympathy. The sympathetic induction of emotions in moral and aesthetic education. Passive sympathy in crowds and groups. Active sympathy: the parental or protective impulse. The appeal for sympathy and help. Fear and the avoidance of danger. Disgust and repulsion.

*VII. Anger, Pugnacity, and Aggressiveness; Self-
assertion and Self-submission*

83

Pugnacity and war. Assertiveness and self-assertion. Self-display. Individual differences in self-assertion. Self-assertion in the teacher. Self-submission or self-abasement. A note on 'Ego-involvement'.

VIII. Suggestion, Imitation, and Gregariousness

94

Suggestion under hypnosis. Suggestion in waking life. The suggestibility of children. Affection, desire, and suggestion. Self-assertion and contrary suggestion. Incidental suggestion. Desirable qualities in the teacher or leader. The limits of suggestion. Imitation. Gregariousness and sociability. Sociability. Sociability and experience. Gregariousness, privacy, and loneliness.

IX. Sex and Sex Education

Sex as an 'appetite'. Sex in infancy, and the supposed Oedipus Complex. Sex maturation at puberty. Changes in attitude towards the opposite sex. Homosexual attraction as a substitute for normal. The mature sex impulse in later adolescence. Sex education.

X. The Unconscious, Repression, Sublimation, and some Freudian Ideas on Sex

Reasons for studying the psychology of the unconscious. The need for the study of normal persons. Some main facts about unconscious processes. Dissociations and complexes in more normal persons. Mental conflict a cause of repression. What is repression? The solution of conflict by sublimation. Sublimation contrasted with substitution. Sublimation of sex.

XI. The Inferiority Complex and some other Complexes and Neuroses

Self-assertion. The inferiority complex. The 'feeling' of inferiority. Excessive self-assertiveness. The 'parent' or 'father' complex. The 'mother complex'. Unconscious appeals for sympathy or protection: some 'defence mechanisms'.

XII. Temperament and the Co-ordination of In-nate Tendencies

Conscious and unconscious motives. The unification of innate tendencies. The grouping of tendencies and emotions. Types of temperament. The co-ordination of tendencies by the self or by social training. Alternating and conflicting tendencies. The checking of one tendency by another. The social checking or encouraging of crude impulses. The control of impulses by thoughts of future consequences. The influence on tendencies of the thought of the disapproval (or approval) of others.

XIII. Sentiments, Volition, Character, and Moral Habits 156

The nature of sentiments. The sentiment of respect. Sentiments and the co-ordination of tendencies. The sentiment of self-regard and the ideal of the self. Character and the self. Consistency of action and volition. Volitional action not a 'faculty of will'. Volition and the idea of the self. Ideals and moral sentiments. Moral habits and moral training.

XIV. Play, and 'the Play-way' in Education 173

Definition of play. Play as release of energy. Biological function of play. Play in infancy. Play as relaxation. Play methods in education. Boy Scouts and the Camp School. Play methods not always needed. Intellectual work and the necessary conditions for continued interest. Play methods and freedom in education. The Dalton plan and individual work. Influence of the teacher's personality. The problem of compulsory games.

XV. Acquisitive, Collecting, Manipulative, and Constructive or Creative Tendencies 186

Early acquisitiveness. Frequency of the collecting tendency. The educational value of collections. Manipulation and construction. The popularity of handwork in schools. Modern methods of teaching handicraft. Handicraft and duller pupils.

XVI. Curiosity, Special Interests, and the Popularity of School Subjects 194

Fundamental types of curiosity. The appearance of curiosity in young children. Interests shown by questions. Why do children ask questions? Other factors in determining interest. The popularity of various school subjects, and the reasons for their being liked or disliked. The relative popularity of subjects in Grammar Schools. Reasons for liking or disliking subjects in Grammar Schools. The teacher's influence on the popularity of his subject. Reasons for the choice of arts or science subjects in later school life. Special interests and special abilities. General ability and special interests.

XVII. Mental Work, Interest, and Attention

Mental work and volitional choice. Spontaneous attention. Attention and interest. The transition to volitional attention. The means of encouraging volitional attention. Experiment on volitional attention. The doctrine of 'grind' and the supposed training of volitional attention. Genius and concentration. Further incentives to mental work. Mental fatigue and boredom. Experiments on mental work and fatigue. Experiments on mental work and distraction.

XVIII. The Span and Division of Attention or Apprehension

The focus of attention. The range of attention or span of apprehension. Experiments with the tachistoscope. Individual differences in the span of apprehension. The grouping of successive impressions. Some applications in teaching.

XIX. Learning and Remembering

Retentiveness and recognition. Interest and retention. Immediate and prolonged retention. The rate of forgetting. Association of impressions and ideas. Frequency and recency of association. The importance of meaning and relations in association. Learning by 'part' and 'whole' methods. The effect of testing during learning. The best distribution of repetitions. Reminiscence and consolidation. Retro-active inhibition. Perseveration. Imagery and memory. Improvement in learning with practice. Is a general 'training of the memory' possible? How learning and remembering can be improved. Misremembering.

XX. Learning Movements and the Acquisition of Skill

Attention and the acquirement of skill. Learning by the method of trial and error. An experiment in learning by trial and error. Interest versus technique. Individual differences in acquiring skill. Teaching by demonstration. Some further results of experiments on the acquisition of skill. The study of skilled movements in industry. Transfer of training in skills.

XXI. Thinking and Training in Reasoning

278

Popular and more precise meanings of 'thinking'. Useful thinking and reverie. Logic and the psychology of thought. Essentials for sound thinking and reasoning. The forming of full and correct concepts. Concepts and concrete experience. Definitions and examples. The understanding of abstract concepts. Language and thinking. The building of vocabulary and the danger of verbalism. Language and grammar. The apprehension of relations. The process of reasoning. The collection and marshalling of facts relevant to a problem.

Observation and the noticing of facts. Prejudice in observation or in the noting of facts. The suspension of judgement till all relevant facts are known. Generalizations, inferences, and hypotheses. Scientific method and the training of reasoning. Does specific training in reasoning about one subject affect all reasoning? An experiment with the teaching of logic. Summary on the training of thinking.

XXII. Imagination and Fluency

309

The meaning of 'imagination'. Knowledge and imagination in the formation of hypotheses. Forming hypotheses to explain facts. Types in the flow of ideas. Experiments on imaginative processes. Fluency. Conclusions as to imagination. Can constructive imagination be trained?

XXIII. General Intelligence and Intelligence Tests

319

Intelligence and general ability. The need for varied tests of general intelligence. Tests should be independent of education. Individual and group tests. Standardization. The need for repeating tests. The effects of practice and coaching. The constancy of the I.Q., or mental ratio. When does innate intelligence cease to increase? Do intelligence tests test innate ability? Performance tests. Correlation of performance tests with Binet tests. Practical ability not the same as manual dexterity. The use of tests for detecting mental deficiency or dullness, and for selection. Note on I.Q. and percentile scores. Is the average general intelligence of the population decreasing?

XXIV. Special Abilities and their Testing

339

The importance of special abilities. Evidence of the later maturing of special abilities. Performance in school subjects as tests of special abilities. Musical ability. Drawing. Special abilities in early childhood. Ability for numbers and its development. Piaget's researches on number. General and special abilities involved in mathematics. Practical ability. General and special abilities in the selection for Technical Schools. Note on Comprehensive Schools.

XXV. Estimating Temperament, Personality, or Character

358

The influence of some fundamental character or temperament traits. Personality. The unity of personality. The unreliability of intuition. Experiments on intuitive judgements of character. Judging adults by interview. Improved technique for the interview. The distinction between the 'validity' and the 'consistency' of estimates. The reliability (or agreement) of teachers' estimates of character. The danger of 'halo' effects. General and specific traits in temperament, personality, or character. The method of the psychological study of personality. Tests of temperament, personality, or character. Attitude tests.

XXVI. Educational Guidance, School Records, and Attainments Tests

378

The vocational importance of selection for Secondary schools. Selection by examination at 11+. Tests versus examinations. The use of school reports. A suggested scheme for selection. Selection for Technical High School *v.* Grammar School. Home background and educational guidance. School records as to character and promise. Estimates of promise. Prognosis of backwardness. Estimates of attainment. 'New type' examinations. Attainments tests. The use of school record cards.

XXVII. Vocational Guidance

401

Vocational training. Pupils' ignorance as to the nature of occupations. Dominant reasons for choosing an occupation. Inquiry among young wage-earners. The general intelligence needed for various occupations. Occupational level and intelligence among Navy recruits. Vocational tests of special abilities. More general considerations in vocational guidance. The choice of the teaching profession. Vocational choice by girls and the likelihood of marriage.

XXVIII. The Appreciation of Beauty and Aesthetic Education: I. Nature and Visual Art

419

Varied views as to the meaning of beauty. Art, sex, and phantasy. Some general psychological remarks on aesthetic appreciation. The beauty of nature. Childhood and natural beauty. Experiments with colours. Attitude to colour affected by its meaning. The beauty of form. Types of judgements upon pictures. The artist's skill. Agreement among differences. The child's appreciation of pictures. Realism. Children compared with adults. The effect of repeatedly seeing a picture. Experiments with modern pictures. The influence of environment and special training. Can aesthetic appreciation be trained? Individual differences in capacity for appreciation. Possibilities in aesthetic education. 'Knowledge about' art.

XXIX. The Appreciation of Beauty and Aesthetic Education: II. Music

447

Individual differences in the enjoyment of music. The fundamental appeal of sounds. The pleasingness of vocal sounds. Varying attitudes towards musical intervals. Aesthetic value of the attitudes. The development in young children in discrimination between concords and discords. Adaptation to discords. Rhythm. Attention and unifying of musical appreciation. Education in the appreciation of music. The effects of guidance and suggestion. The value of the history and theory of music.

XXX. The Appreciation of Beauty and Aesthetic Education: III. Poetry

465

The unpopularity of poetry. Intelligence and aesthetic sensitivity. Individual differences in the appreciation of poetry. The appeal of words. Rhythm and metre. Imagery in the reading of poetry. Imagery of children when reading poetry. Subject matter. The possible influence of crude subject matter. The enjoyment of poetry by children. The attempt to write poetry as an aid to appreciation. Training in the appreciation of poetry. Experiment with modern poetry.

XXXI. Development in Infancy

Recent emphasis on the importance of infancy. General facts as to early development. The physiological basis of mental development. Maturation. When is a child mature enough for formal instruction in school? The ideal periods for learning specific things. The intermittent nature of early development. The infant's interest in the external world. The average child at Infant School age. Language and thought. Motor development. Adaptation. Sensory development. Social and emotional development.

XXXII. Middle Childhood and its Interests

The chief characteristics of the period. Special abilities and interests. Interests as revealed in preferences for school subjects. From seven to ten in boys. Changes from seven to ten in girls. Individual differences in school interests. Interests revealed by questions. Some out-of-school interests. Reading. Interest in the cinema, Radio, Television. Social behaviour and the development of personality. Changes from year to year in middle childhood. Tests of character development. The development of ideas as to conduct and morals. Variation in ideas of right and wrong with the social grade of the home. Children's ideal persons. Children's ideas as to punishment.

XXXIII. Adolescence: Part I. General, Social, and Emotional

The change at adolescence. Sex maturation at adolescence. The specific influence of sex maturation. Physical development at adolescence. General emotional changes. Some confidential reports. Reports by young wage-earners. The adolescent and religion. Social relationships. Love and sex attraction. Cultural environment and innate development. Ideals, ambitions, and day-dreams. Attitudes to parents. Should we discuss adolescence with adolescent? Attitude to teachers. Youth clubs. Self-government and training for citizenship.

XXXIV. Adolescence: Part II. Intellectual and Out-of-school Interests

Intelligence and interests. Reading interests. The reading of new papers. Cinema, Radio listening. The maturing of special abilities. Interests and preferences in school subjects. Aesthetic interests.

*XXXV. Backward Children, Problem Children,
and Young Delinquents* 580

- I. BACKWARD CHILDREN. Backwardness: its meaning and frequency. Causes of backwardness. Complexity of causes of backwardness. Absence from school. Specific types of backwardness.
- II. PROBLEM CHILDREN. The frequency of emotional symptoms and of troublesome behaviour. Frequency of problem children. Main types of problem children. Is bad training always responsible for problem children? The effects of home environment. Discipline in the home.
- III. YOUNG DELINQUENTS. Frequency of juvenile delinquency at different ages. Types of crime. Home conditions and juvenile crime. Defective discipline. Emotional instability. Treatment and its effects. Delinquency and youth clubs. Conclusion.

XXXVI. Mind and Body 607

The nervous system. The autonomic nervous system. Emotions and physiological changes. The endocrine glands. The thyroid gland. The pituitary gland. The sex glands or gonads. The unity of the brain and nervous system. Reflexes and purposive behaviour. The approach to philosophy.

Appendix: Correlation and other Common Statistical Terms 623

The finding of correlations and their uses. The calculation of correlations. Spearman's Foot-rule for correlations. More exact methods of calculating correlations. Graphic examples of a correlation. Common statistical terms. The reliability or consistency of a test. The curve of normal distribution. A skewed curve. Average and scatter. Percentile scores. Standard deviation, with example. Standard score. Standard error and the significance of differences.

Index of Names 635

Index of Subjects 641

TABLES

I. Children's questions	<i>page</i> 199
II. Reasons for liking school subjects	203
III. Order of popularity of subjects in Grammar Schools	204
IV. Intelligence levels in different schools and vocations	410
V. Order of aesthetic value of types of judgement	454
VI. School subjects in order of preference: Boys (1925)	514
VII. School subjects in order of preference: Girls (1925)	515
VIII. Order of preference for school subjects in Worcestershire Elementary schools (1935)	517
IX. Punishments disliked most	533
X. Order of effective incentives in school	534
XI. Changes during adolescence in University students	545
XII. Changes during adolescence in young workers and Technical students	548
XIII. Newspaper reading among adolescents	570
XIV. Preferences in school subjects among adolescents (Boys and Girls)	576
XV. Percentage of persons reporting increased aesthetic interests during adolescence	578

FIGURES

1. Analysis of memory	<i>page</i> 14
2. Apperception illustrated	22
3. Distribution of Intelligence Quotients	41
4. Curve of forgetting	243
5. Mirror-drawing curve	266
6. Maze	268
7. Ink-blot test	315
8. Increases in weight in boys and girls, ages nine to fourteen	541
9. Frequency of religious conversions at various ages	549
10. Example of a high degree of correlation	629
11. Curve of normal distribution	630
12. Curve showing same averages with different scatter	632

CHAPTER I

INTRODUCTION

The scope of this book. In this book I have tried to provide an introduction to the study of psychology, primarily for teachers, youth-leaders, and others interested in education, but also for social workers in other spheres. This may seem to be too general for the teacher, but I take the view – held indeed increasingly by our leading educational thinkers – that the teacher's work is much more than classroom instruction. Practical applications to problems of teaching and discipline will constantly be made in this book. We shall discuss the psychology of learning and remembering and of general intelligence and special abilities; of individual differences – so important in school work; we shall examine current ideas as to the training of observation, memory, imagination, and so forth. But the teacher's work is closely related to other great social influences. One has only to think of the profound effect of the home on the development of the child; or of the great influence of religion or of youth societies on many of our adolescents.

Furthermore the teacher's own happiness, good temper, and efficiency are largely dependent on his control of his own life, on the co-ordination of his impulses, and on some knowledge of unconscious influences on processes underlying his own behaviour. Psychology also brings home to one the great differences between individuals, in abilities, interests, and temperament: and this realization of individual differences should aid both in social adjustment of the self and in helping adjustment in others.

For the teacher, then, the bearing of psychology on social self-adjustment is a relevant study. It is important to him still more because it is part of his business, as it is of all who work for the good of children and young people, to try to understand something of the difficult problem of the social-adjustment of

the children themselves. For to help our young people towards sound mental health, to avoid the setting up of complexes or laying the foundations of minor neuroses (now known to be so common in the community) should be one of the aims of teachers and other workers among the young. Thus it is, in my view, unnecessary and undesirable to separate what is often called 'educational psychology' from general psychology. True there are many sections of a complete psychology that can be passed over with few references in an introduction to psychology of this type; but many of the topics of greatest importance for education are also of interest to us as human beings who have our own lives to live.

Furthermore, on the basis of over thirty years' teaching of psychology, I believe that an appeal to the student's concern with his own mental experience and with questions of everyday life, is the best means of rousing interest, and that the teacher's study of psychology should not be confined to the specific application of psychology to the study of childhood and of school education, though that should, of course, be emphasized throughout.

As we proceed with our study of the human mind, we shall constantly touch upon practical applications of each of the various points dealt with; but it is in my opinion a mistake to start, as some writers do, with practical problems of education and then bring some psychological discussion into each of these: for in this way it is not easy to get finally a systematic general view of the mind, and the psychological knowledge acquired is likely to be scrappy. A systematized view is important because new types of practical problems are constantly cropping up as new educational ideas and methods appear, and these cannot be dealt with by rule of thumb, for they may not resemble sufficiently any of the previous practical problems studied.

The teacher and youth leader therefore needs a coherent general view of the mental processes and of the development of character, so that he can bring his knowledge to bear upon the new problems as they arise. As an example of this, I might mention the importance of a general knowledge of psychology

in approaching and criticizing some of the new ideas about discipline which have arisen largely as a result of superficial ideas about the psychology of unconscious processes and of repression.

What psychology is not. The student cannot expect to have a satisfactory answer as to what psychology is until he has studied the whole of some comprehensive book on the subject. In this section we will attempt only a brief indication as to what it is not.¹

It is surprising what misconceptions there are even among educated people as to what psychology is, misconceptions which have often led either to prejudice or unbalanced enthusiasm. This is due to several reasons. One is the frequent appearance in the popular Press of statements about what 'psychologists tell us'. These are often very one-sided views exaggerating some opinion held by only a few psychologists or even by some who are not properly qualified psychologists.

Another reason for misunderstanding and prejudice is that the subject is so often taken up, and even books written about it, by amateurs with no sound training in general psychology. Hence there are psychological 'quacks' who dogmatize about education or mental health on the basis of very little knowledge of sound psychology. For example, some of the extreme statements made about the undesirability of all punishment in children are of this kind: so are some made by medical psychologists as to the danger of the 'repression of instincts', usually with special reference to sex - leaving the meaning of repression very vague and often misunderstood by the general public.

Many persons confuse psychology with Freudian psycho-analysis and think that psychologists trace all nervous troubles to sex problems. Indeed, they may imagine that Freud was the first psychologist and that the only schools of psychological

¹ For the reader who would like a formal definition at once I would start with the following. *Psyche* is the Greek for Mind; and Psychology is the scientific study of the mind, including not only intellectual but also emotional experience, and including motive forces and actions or behaviour. It gathers facts by observation and experiment, as well as by introspection, sometimes subjecting these facts to statistical treatment; and it seeks to establish general principles or laws.

thought are those associated with the names of Freud, Jung, and Adler; whereas Freud was in the first place a medical man concerned with abnormal persons, and though he made a unique contribution to the advance of psychology, was ill-informed about some aspects of psychological knowledge and so tended to over-emphasize the importance in human nature of certain elements which appeared prominent in the neurotic cases with which he had to deal. Indeed, in the sphere of nervous disorder he probably exaggerated the importance of sex as a cause of trouble, as we shall see later in the chapter on the psychology of the unconscious. Important as sex problems undoubtedly are in many mental disorders, the study of mental disorders among soldiers in both the world wars, as well as among many civilians, has given us clear evidence that many personal anxieties, problems of social adjustment, fears, and unpleasant childhood experiences not connected with sexual problems may also be the root of troublesome disturbances in the mind. Such supposition that Freud is the chief authority on psychology and that he attributes everything to sex is one of the main reasons why prejudice against psychology has arisen in some quarters; and it is important to emphasize that much of the prejudice is due to misunderstanding, not only of Freud's position as a psychologist, but frequently of what Freud himself taught.

Is psychology of any practical use? It may seem that on many important topics psychology speaks with an uncertain voice, though we shall see that there is much more agreement among competent psychologists than is usually realized. Particularly is there agreement on some of the practical applications of psychology, even when there is some difference of opinion as to the theory underlying them. Let me give a few clear examples of the use of psychology.

(a) *Psychology in industry.* Psychologists have shown that by approaching industrial activities from a psychological point of view, time and money and discomfort can be saved, for instance by a study of the conditions under which breakages took place. For example: One large firm, convinced that the break-

ages were due to sheer carelessness, applied fines – and found in six months that the breakages had actually increased. Another firm called in psychological experts. They carefully studied the special conditions when most breakages occurred; arranged for the easing of conditions at rush points – for lessening causes of irritation and fatigue, and so on. This resulted in the reduction of breakages by 53 per cent., and the workers were unanimous in their appreciation of the greater smoothness and ease of their work.¹

Examples of this type show beyond doubt that the psychologist can sometimes accomplish things when plain common sense – as no doubt the fines appeared – is baffled.

Tests of *vocational aptitude* are now also being used by many progressive industrial and business firms. One of the most striking examples was afforded by a bicycle ball-bearing factory in America. The work in detecting defects in the bicycle had to be rapid and accurate. By selecting workers on the basis of certain tests it was found possible to more than double the output while increasing the accuracy by over 60 per cent.²

(b) *The use of intelligence tests.* Intelligence tests exemplify the practical application of psychology more closely concerned with education, and are so important that we must devote a special chapter to them later. Here I wish simply to indicate that the value of the tests is now beyond dispute. They have, for example, made the detection of mental deficiency at an early age far more reliable: for general impression and even progress in the school proved to be most untrustworthy. By tests it has been possible to show that some children in school who have been thought to be lazy and inattentive are quite unable, through lack of innate ability, to do the work required of them. Also, as we shall show later, by means of intelligence tests it has been possible to select pupils of eleven years of age

¹ See *Industry in Great Britain*, by C. S. MYERS (London, 1925), p. 96.

² See C. S. MYERS, *Mind and Work*, p. 89. Many more recent examples of the use of psychology in industry will be found in the journal *Occupational Psychology*, and its predecessor *The Human Factor*. I have deliberately taken my examples from a period when more striking results were obtained, before the value of careful early selection and of many principles of efficient work became more widely known, and procedures improved.

suitable for the Grammar School type of education much more reliably than it was by many of the examinations in English and Arithmetic, as judged by the performance of the pupils four or five years later in the Secondary Schools. These examinations also led to much premature pressure in Junior and even Infant Schools, and to special coaching of some of the children at home, with all the attendant evils and unfairness.¹ These facts and the unreliability of the awards led to the recommendation by Norwood Committee (approved in the new Education Act) that the old type of examinations, for admission to Secondary Schools, should be abolished.

A large proportion of Local Education authorities throughout the country now use intelligence tests in their selection of pupils for Grammar Schools, and often for first grading in Infant and Junior Schools.

(c) *Vocational guidance tests* of special abilities (e.g., of mechanical ability or of clerical accuracy) have also been used in advising youths what occupation to choose. For example, in one inquiry it was found that those who did well in the mechanical ability tests, and took up engineering, proved on the whole much more successful than those who were advised not to become engineers, because of poor performance in the tests. We shall also discuss this important question of vocational guidance more fully later.

(d) *Tests in the Army.* Many readers may have heard of the use of intelligence tests in the Army, and may even have been subjected to them. I would ask them to suspend judgement on their value until the chapter on Intelligence Tests has been read. For to the uninitiated it is usually difficult to see how the simple tests used are really tests of intelligence; also, in the early stages at least, testing in the Army had to be done far too rapidly to be very reliable. Furthermore, intelligence is no more important, even in an officer, than are qualities of character, courage, and devotion: some very intelligent men may make bad soldiers. The valuable results gained by the last World War have not yet appeared in very accessible publica-

¹ See C. W. VALENTINE, *Examinations and the Examinee* (Birmingham Printers, 1938), Chapter I.

tions.¹ But the value of intelligence tests as a rough preliminary means of prophesying success as an officer was clearly shown even in the First World War. Tests were applied to many thousands of men in the U.S. Army, who were classified in grades; A indicating very high intelligence, B and C the next grade, and D the lowest. (The sign + or - was also used with C.) The Army training careers of the men were then followed up, and it was found that of men rated *above* C+, only 8 per cent. had to be rejected through failure in the Officers' Training Schools, whereas for the men rated *below* C+ the number of failures was 58 per cent.

(e) *The cure of minor mental disorders.* Here again is a very important application of psychology to which I can only refer very briefly. There will be fuller references to it in the chapter on unconscious processes and elsewhere. The frequency of mental disorders, of complexes, and maladjustments to social life has only recently been realized. Apparently, at least a quarter of the adult population is suffering from them more or less.² Numerous references could be given to evidence by psychologists, that many cases of minor mental disorders (or neuroses) have been relieved by purely psychological methods, though many also are no doubt complicated by bodily diseases or disturbances. I will give here two examples. The first example is a case reported by Professor McDougall.³

¹ A comprehensive early survey was given by Professor Sir Cyril Burt in his Presidential Address to the British Psychological Society (1942). See also P. VERNON's paper in *The Journal of the Royal Statistical Society*, Vol. VIII.

An authoritative book is *Personnel Selection in the British Forces* (1949) by PHILIP E. VERNON and JOHN B. PARRY. In this book ample evidence is given of the value of tests of various kinds in selection and in prophecy of success in training. But the evidence is given chiefly in the form of correlations and other ways not yet explained in this book. References will be made to the book in later chapters on Intelligence Tests and on Vocational Guidance.

² See *The Nervous Temperament*, by MILLAIS CULPIN and MAY SMITH (Industrial Health Research Board, Report No. 61, London 1930. Also *The Incidence of Neurosis among Factory Workers*, by RUSSELL FRASER (Industrial Health Research Board, Report No. 90, 1947).

³ See *Functional Nerve Disease*, edited by H. CRICHTON MILLER (London, 1920, p. 191; and McDougall's *Outline of Abnormal Psychology* (Methuen, 1926), p. 245.

A Canadian soldier came under his care shortly after being sent home from the battle-field suffering from extensive loss of memory and general weakness, etc. He had forgotten a great deal about his earlier life and could not even remember whether he was married, though he supposed that a photograph he found in his pocket was one of his wife. McDougall hypnotized him several times and concluded that there was a strong resistance to the recall of memories, especially the recall of experiences in the trenches. McDougall was able to overcome finally this resistance, and the memories were recalled, including a detailed description of the horrors witnessed at the front, and lastly of the soldier's earlier home life. An interesting point about this case was that, after the recall of the forgotten experiences and the release of the repressions, the patient's physical vigour was greatly increased immediately; he had been tested before with a dynamometer and had never been able to force the index beyond the 30-kilo mark, but within an hour of his recovery of memory he reached the 90-kilo mark.

My second example relates to a former student who, after hearing me lecture on the psychology of the unconscious, came to consult me about occasional paroxysms of fear from which he suffered. At these times he had an overwhelming emotion of fear without having any conscious object for the fear. The experiences lasted only two or three minutes and then passed off. He had had these from the period of adolescence but could think of no possible reason for them. I gave him the word association test described in a later chapter, and one of the words I gave him - 'care' - resulted in a prolonged pause before he gave the reply, 'care of health'. I noticed also a rather strange expression on his face. I told him to think over this word association and several others in the list, and on his next visit some days later he told me that during the pause between my saying the word 'care' and his response, he had had one of the horrible paroxysms of fear. The response 'care of health' gave us a clue, and as a result of inquiry I found that he had been deeply anxious during adolescence when certain sex developments occurred which he could not understand, and he thought then that he had something serious the matter with

him. I suggested that this was the origin of these moments of extreme fear, that in the original cause had been repressed sufficiently to be dissociated from the emotion. I pointed out that, now he knew the nature and entire harmlessness of the sex phenomena, there was no cause for fear.

I saw that student occasionally up to five or six years later, and he told me that never again had the paroxysms of fear occurred. This example will be more comprehensible when the reader has studied the later chapter on the unconscious. Scores of similar cases might be quoted from psychological publications.

Psychology as a guide to probabilities. We have now had brief examples of how psychology has been usefully applied in various fields - industry, education, the Army, and mental health. We shall find later further evidence that psychology is not confined to vague speculation.

We must not expect, however, that all the applications of psychology will be of such a definite and concrete type as those we have given. Frequently psychology can only state a *probability*,¹ but that does not mean that its guidance is not useful, for when we look into them carefully we find that even the greatest decisions in life have to be based only on probabilities, for example, the choice of a youth's occupation, or even the choice of a life mate. For though to the infatuated lover the rightness of his choice may seem an absolute certainty to him, onlookers in judging the situation may consider that the wisdom of his choice is rather more a question of probability or even possibility!

The problems of education and of other social influences which we wish to bring to bear on young people are, however, so supremely important for human welfare that even a slight amount of sound evidence may be of value.

Plan of study for this book. The best way to begin the study of psychology, in my opinion, is to read an elementary, though fairly comprehensive book right through and then to re-read it, supplementing the study of points in which the student is

¹ Sometimes by statistical methods the degree of probability can be stated with considerable precision.

specially interested, by further reading guided by the references given.

The reason for this plan is that in psychology it is impossible to study any problem properly in isolation. It might almost be said, paradoxically, that you cannot study one topic until you have studied all. At least, a fairly brief survey of the main field should be obtained first.

In this book this plan will be followed to some extent. We shall begin by a rapid survey (in Chapter II) of common ideas as to mental faculties and their training and of the need of precise interpretation of terms (e.g., 'imagination' or 'habit'). Then in Chapter III we shall expound the modern psychological view of mental abilities — general intelligence and special abilities. Thus the reader will get a brief preliminary study of the elements of intellectual processes, which the student of Education is likely to need so early in his theoretical and practical work. The more precise methods of study of intelligence and abilities also give us a model for our examination of the motive forces in human nature. These we turn to immediately after Chapter III. For intellectual processes cannot be dissociated from these other aspects of the mind — including interest, instincts or 'drives', and emotions, the foundations and motive forces of intellectual work itself.

On the whole, it will be best for the student to read the book straight through. But in some early chapters topics will be dealt with briefly which are dealt with more thoroughly in a later chapter: and indications will be given when the student can proceed at once to the later chapter if he wishes.

In particular, the student who wishes first to study the more intellectual activities of the mind, attention, and interest, of learning, remembering, thinking, and so on, and their bearing on the work of instruction in school, could proceed direct after Chapter IV to Chapter XIV and following.

In a first book it is desirable to avoid confusing the student with details of controversial points; it should rather concentrate on points of general agreement, as I shall try to do. On the other hand, it is essential to indicate widespread disagreements when they exist. Even if they leave the student with un-

decided views on important topics, that is better than over-confident views which are ill-founded on inadequate facts. Indeed, one of the advantages of an approach to psychology which seeks to be cautious and scientific is that it reveals to the student the lack of grounds for many of the dogmatic and sweeping generalizations made by some writers, and often assumed in popular views of the mind.

References for further reading and for evidence on important generalizations will be given in footnotes, where more difficult points will sometimes be discussed.

Note. Throughout the book the usual convention for indicating the age of a child is followed; thus 6 ; 4 means 6 years 4 months.

CHAPTER II

SUPPOSED MENTAL FACULTIES AND THEIR TRAINING

The mind is commonly thought to consist of a number of 'faculties' – such as memory, observation, perception, reasoning, will, judgement, and so on, pretty much the same as those described by the phrenologists who feel the 'bumps' on a man's head and describe his capacities according to the chart of the skull which they have mapped out. It is supposed that a man has a good (or bad) memory *in general*, and that the exercise of the memory, say on history dates or Latin verbs, will strengthen the memory as a whole; and that a training in the observation of wild flowers will sharpen the whole 'faculty of observation' whatever is to be observed; or again that mathematics, since it exercises the 'faculty of reasoning', equally improves reasoning about politics, social problems, and religion.

This view as to mental faculties is still widely held by most educated people who have not studied psychology, and it still has a harmful influence on education in some ways, as we shall see. Let us consider this 'popular psychology' carefully, discussing in this chapter the supposed intellectual 'faculties'.

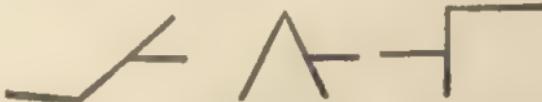
The supposed 'faculty of memory'. It is often said that one man has a 'good memory' and another a 'bad memory', implying that if one is good at remembering one kind of thing, say poetry, one is necessarily good in remembering other kinds of things, e.g., historical dates or names of people. In other words, memory is regarded as a general mental faculty.

Now ordinary observation of everyday life should be enough to make us doubtful about this. One often finds that a man has a good memory for faces but a bad one for names, or vice versa. Personally I find that I very rarely fail to recognize the faces of former students, even if I have not seen them for ten or more years: yet I often forget a name a student has given me a

few minutes before and even after it has been told me several times.

In psychology, however, we must not be content with everyday observation if we can experiment: and there is experimental evidence to show that it is wrong to speak of a faculty of memory or of having a good memory.

Rote memory and substance memory. Suppose we test a group of fifty persons in learning and remembering several simple passages of prose, or ideas connected in meaning. On the basis of such tests we draw up an order of merit in 'Substance Memory', sometimes called 'logical memory'. Then we test the same persons in learning 'by heart': (a) a series of words in a foreign language unknown to them; (b) a series of nonsense-syllables, i.e., sounds which have no meaning, specially devised for experiments of this kind (for example neb-dax, zer-rup, jek-miv; (c) a series of meaningless diagrams, e.g.,



On the basis of the tests in the three series (a), (b), and (c) we draw up the order of merit of our fifty persons in *Rote Memory*. Now it is found that the two kinds of tests – Substance and Rote – give very different results. Persons very high in substance memory tests may be very low in rote memory tests, and vice versa. Indeed, I have known students in a group of about fifty come bottom or nearly so of the list in Rote Memory and near the top of the Substance Memory tests.

Visual and auditory rote memory. It is clear already that we have at least two kinds of mental abilities involved in such 'memory work'. But other experiments take us farther. Suppose we arrange two series of Rote Memory Tests,

A. *Visual Tests*, in which the foreign words, nonsense syllables, and meaningless diagrams are shown on a card or screen, and

B. *Auditory Tests*, in which the words and nonsense syllables are read aloud by the experimenter.

Again we find two very different orders of merit for the series A and B. In classes as large as 100, I have often found a man near the top in one series and near the bottom in another. So it looks as though one may be said to have a good visual memory and a poor auditory memory. But even now our analysis has not gone far enough, for experiments have shown that the visual memory for diagrams and that for colours are not identical: indeed, there seems to be a sex difference here – the men, on the average, remembering diagrams better than do the women, the women remembering colours better.

We may represent our results so far by a diagram giving an analysis of the general term 'memory abilities'.

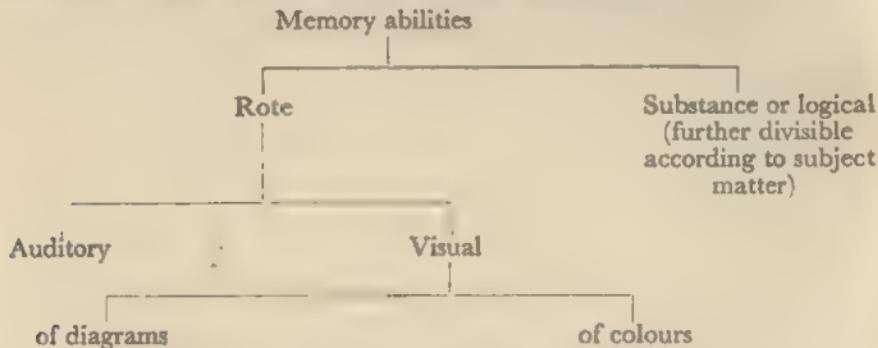


FIGURE I
ANALYSIS OF MEMORY

This diagram must not, however, be taken to give a complete analysis of memory. For example, differences of *content* (e.g., learning words as against sets of numbers), are found to make greater differences in scores than is made by a difference in the mode of presentation – visual or auditory.

It should be pointed out that there is, on the whole, *some* tendency for those good in Auditory Tests to be good in Visual Tests – the orders of merit do show some 'correlation'.¹

¹ The extent of the correlation or resemblance of two orders can be expressed by a decimal fraction. If two orders are exactly alike, the correlation is expressed by the figure 1. If two orders are exactly the opposite of each other the figure is -1. A resemblance which would be obtained by mere chance (e.g., picking two sets of numbers out of two bags) would give a correlation of 0. The correlation I have obtained between orders in visual and

In other words there is some common element in the various capacities involved. (This will be discussed further in the next chapter and elsewhere.) But the main point I want to stress here is that some different abilities must be involved to give such different orders: so we cannot speak of *the* memory or *a* good memory but must refer to different memory abilities, or better, different abilities for learning and remembering – according to the kind of procedure in learning (by seeing or hearing) or to the kind of things we try to remember (ideas connected in meaning or disconnected words or meaningless sounds). We must stress again the fact that the content of the material learned, e.g., whether meaningful words, or nonsense syllables, seems to make more difference than the mode of presentation – visual or auditory.

Interest and learning. We have still to mention the supreme importance of interest in learning and remembering. Most people have realized in their school days how hard it is to learn thoroughly things in which they have little or no interest – foreign words, historical dates, arithmetical tables. However hard a boy tries to learn these, if he is not really interested, tedious repetitions are necessary.

On the other hand, suppose that a boy, keenly interested in, say, football teams and league matches, collects fifty cigarette

auditory tests is usually about 0·2 or 0·3, which indicates a low correlation or resemblance. (Graphic representations of actual correlations will be found in the Appendix, p. 623, where also are given simple methods of calculating correlations, and examples of what may be considered high or low degrees of correlations. It is desirable that the student should gradually acquire familiarity with such examples.)

One investigator who tested school children found a correlation between visual and auditory memory of 0·07 (see N. CAREY, 'Factors in the Mental Processes of School Children', *B.J.P.*, Vol. VIII, 1915, p. 90). Another found a correlation of less than 0·5 even between the remembering of colours and of meaningless diagrams. (Elsa Walters: reported in F. C. THOMAS's *Ability and Knowledge*, p. 313.)

Some investigators have found practically no correlation at all between substance and rote memory. See G. M. WHIPPLE, *Manual of Mental and Physical Tests* (3rd edit., 1921, Part II, p. 218), where many experiments on memory are summarized. W. BROWN, testing children of about 11 or 12, found correlations of 0·38 and 0·49 (*B.J.P.*, 3, 1910), between learning poetry and learning nonsense syllables. But that is what some poetry may be to many children!

cards with the colours and names of the captains of famous teams. Without any effort to learn these he will sometimes be able to tell you the colours of nearly all the fifty teams and the names of their captains. Thus we see that learning and remembering are complex processes involving several different kinds of ability: they are greatly affected by the kind of material learned, and by the varying interest of the person learning in different kinds of material; and they are greatly facilitated by the linking of items together by meaning, as in a series of sentences all about the same subject.

The supposed 'training of memory'. Another fallacy in this popular idea of the 'memory' is its assumption about training. For example, it is supposed that if one exercises one's memory on say poetry or Latin vocabularies, the 'faculty' is strengthened as a whole, so that one can also remember historical dates and chemical formulae more readily. Memory is thought of as resembling the bicep muscles, which can be developed by the use of dumb-bells, so that they are more efficient later in lifting a heavy portmanteau.

This question of 'training the memory', and other supposed faculties is a complex one and will be dealt with more thoroughly later. But here we can at least see that, if learning and remembering different kinds of things involve different abilities (as shown above), we have no right to assume that exercising one ability will improve another; and so far as learning and remembering depend on interest we cannot suppose that learning certain interesting things will facilitate the learning of other things whether interesting or not. In the most thorough experiments on the training of learning and remembering there was evidence that repeated practice in learning prose passages may result in some improvement in the capacity to learn and remember other prose passages, but no evidence that it will improve the learning and recall of quite different material.¹ Yet the improvement of the memory has often been given as one of

¹ The experiments referred to are those by W. S. SLEIGHT described in his *Educational Values and Methods*, and more fully reported in his articles on Memory and Formal Training, *B.J.P.*, 4. We shall discuss the 'Training of the Memory' again in Chapter XIX, p. 254.

the justifications for pupils learning many things by heart – Latin irregular verbs, or poetry, or history dates.

Here again this ‘faculty’ psychology erred in ignoring the supreme importance of content and material and of interest in that material, as factors in the apparent improved capacity to learn and remember. As a boy’s knowledge of English History grows, he finds new facts and dates easier to remember because he already has a scheme of facts and dates and ideas to which he can attach the new facts: he has a skeleton outline of dates in which to ‘place’ the newly learned event. Also, names of people and places, and great movements come to *mean* more to him, and as we saw, meaning helps to link ideas and impressions, as well as to increase interest.

This is the important element of truth in the view that one’s capacity for learning and remembering the facts of history increases with our knowledge of it; and so with other subjects.

Finally, even if there were any truth in the view that any kind of learning and remembering brought about a general improvement, it would be foolish to prescribe learning especially for that purpose. For there are so many things which are well worth learning *for their own sakes*, that ‘the memory’ might as well be exercised on these.

Some practical applications to teaching. Some of the above points about learning and remembering may have seemed obvious: e.g., that interest is supremely important for learning; that ideas connected in meaning are much better remembered than meaningless or disconnected words. Yet teachers often fail to ensure that pupils thoroughly understand a poem before trying to commit it to memory. Other points of practical importance in the psychology of remembering will be given in Chapter XIX. Here a few things may be stressed:

Some persons remember better things seen rather than heard – others vice versa. Many, probably most, are of a mixed type. In general, teachers should if possible appeal to both senses: but some things can far more readily be learned and remembered if they are seen and not merely described orally – for example, the positions of places on a map. Yet some teachers will be content to say that A is north of B and C is east, without

ensuring that the pupils see their positions on a map. Experiment has shown that not only facts of this kind, but names and dates, can be learned by a class much more effectively in the same time if a simple map is used and all names are written down on the board instead of relying merely on description in words. This is true even for adults who have not the child's difficulty in grasping readily such ideas of direction or magnitude. The superiority indeed of the map and blackboard method may be as much as about 30-40 per cent.¹ The same will apply to the seeing of objects instead of merely hearing a description of them. Young children also take some time to realize clearly what is meant by, say, 'one thousand, five hundred and thirty-six'. To see 1,536 as well as hear it facilitates and quickens apprehension.

The teacher must also bear in mind that to the pupil, the names of places and rivers and mountains, or of kings and ministers, are almost the equivalent of nonsense-syllables until he has learned interesting facts about them and constantly heard the name mentioned in connexion with those facts. It would be well for the teacher to try to learn the pairs of nonsense syllables given below by reading them three times over, then reading over the list of words below, three times, and then trying to write the lists out half an hour later: or, he could read out the list of nonsense-syllables to a friend and then the list of words (at the same rate) and afterwards ask the friend at once to write out both lists. Though the words are not connected in meaning, they are far more easily recalled because of their familiarity and their meaning.

Lev-dax	geb-miv	cib-gok
jck-sub	rud-wom	zub-nug
wuf-pib	sev-gix	yit-var
Bicycle	thunder	trousers
apple	happy	window
London	breakfast	marriage

¹ See the experiment 'On the Value of a Map' in my *Introduction to Experimental Psychology*, Chapter V.

Finally, it is futile to give any work to children in order to train the memory *in general*.¹

The supposed 'faculty of observation' and its training. Another example of error in popular views about the mind appears in the idea of a faculty of observation. One often hears it said that we should train the observation of our pupils; and it is imagined that by training them to observe certain things we are training them to observe anything and everything. A method of instruction used in the Army, in which a man had to observe quickly and remember a score of various objects on a tray, seems to have been based on this idea.

One of my students once gave a lesson on Botany in the presence of an inspector of schools. After the lesson the inspector said to her: 'Yes: that was an interesting lesson, but what I want to know is, Are you training the pupils' powers of observation? Would they, for example, be able to tell you the colour of the tie I was wearing?' The inspector overlooked the fact that the more the pupils had concentrated their attention on the lesson, the less would they be likely to notice the colour of his tie; and that the more interested they were in the flowers studied, the less would they be likely to attend to him or his personal appearance. (I should like to add that this incident occurred a good many years ago. Inspectors are better informed nowadays on psychological matters.)

Observation, in fact, depends on interest and knowledge. If three friends travel abroad, one an architect, another a botanist, and the third a stockbroker travelling with them only to take a 'cure' abroad, and interested only in his health and money-making, then the architect is likely to notice the style of houses and other buildings more than his friends do, because he is specially interested in them. The botanist will observe especially the flowers and trees of the country more than his friends; and he will actually see more details because he knows what to look for. Observation is guided by knowledge, and prompted by interest. We have, however, no reason to suppose that the botanist, trained in such observation, or the architect, keenly

¹ The student may, if he wishes, read now the later chapter on 'Learning and Remembering'.

observant of buildings, will be more observant than the stock-broker of the faces of the foreign people they meet, or the dress of the women. Indeed, they are more likely to have their attention diverted by the objects of their special interests. So training in the careful observation of the varied endings of Latin words, or of the changes in chemical substances in experiments, will have no effect on the observation of pictures or of the movement of the stars.

These popular ideas about the mind and its faculties sometimes have an element of truth in them which makes it all the harder for the psychologist to eliminate their exaggerations. For example, as to observation: a careful training in observing plants under the microscope includes a training in method, in the value of the precise description of what is actually seen (and not merely what one thinks should be there), and so on: and a student with such experience will gain something from it if he turns to another similar study, e.g., zoology or geology, especially when he also uses the microscope. Here we see that the adoption of an ideal of truth and exactitude in such work, or a training in a method of procedure in one kind of work, may result in its application in a similar kind of work — though it does not always do so, as we shall see in a later chapter when considering training in reasoning.

In the education of the young child, it may be that one of the most valuable things at certain periods is that he should study carefully the objects of the outside world, and not spend his time in apparent day dreaming (though some of that may be useful reflection). But any increased tendency to observe will be due to an increasing interest in and knowledge about the particular kind of things studied, and not to the development of a kind of little engine in the mind which can be labelled, 'the faculty of observation'.¹

Observation, perception, and apperception. In the last section I stated that a botanist will actually *see* more details in flowers

¹ We refer later on to two types of persons: (*a*) the *Extrovert*, whose attention and interest are largely turned outwards to things and other persons, and (*b*) the *Introvert*, whose attention is concerned more with the inner self. But most people are of a mixed type. (See Chapter XII.)

and trees than a man with no such special knowledge or interest, because the botanist knows what to look for. This may raise the question: 'But surely the things which strike the eye of each of the two men, the visual sensations must be the same?'

To answer this and show its bearing on observation we must refer briefly to the process known as 'perception'. Suppose an African native, who has never before seen or heard of an aeroplane, suddenly sees one flying low overhead; the picture on the retina of his eye is the same as is that on the eye of an experienced pilot standing near by, but the native will probably say he has seen 'a large bird'; the pilot will tell you that he has seen a Messerschmitt 109. Each interprets the object seen in the light of his previous experience and knowledge.

This influence of the mind in the process of perception can result in curious tricks. We perceive white objects as white in the moonlight because we know they are white ordinarily, though in moonlight they are not really white. An artist may possibly see distant trees and hills as blue, when we should say they looked green. If you turn a coloured picture upside down you often see a marked change in the appearance of the colours; they stand out more decidedly in their unfamiliar position, and especially if the objects are then not recognized. So even in the perception of an object the mind contributes a good deal. The reader may recall Wordsworth's lines,

'The mighty world
Of eye and ear, both what they half create and what perceive.'

Sometimes, of course, illusions may actually result from the reading by the mind of meaning into things seen. This happens especially in emotional states. As Shakespeare puts it,

'In the night, imagining some fear,
How easy is a bush supposed a bear.'

The figure on the next page is usually perceived as the head of a duck or a hare, according to what is in the mind of the perceiver at the moment.

The reader may try this experiment. First speak to a friend about ducks and geese, and ask him what he thinks of this



drawing; to another first speak about rabbits and hares, and then show the sketch and put the same question. Sometimes if you have first spoken about ducks the reply may be that 'It does not look like a duck, but a hare, to me,' but as a rule the suggestion works.¹ Mention the word ball to one man who is a keen golfer, to another who has just seen a football match, and to a young girl who has just bought a new evening dress, and by the first person the word will probably be thought of as referring to a golf ball, by the second to a football, and by the third to a dance.



FIGURE 2
APPERCEPTION ILLUSTRATED

This example illustrates a wider principle than the interpretation of things immediately present to the senses. It is something more than perception. It is better to keep the term perception as including only the immediate interpretation by association of objects sensed. In this sense we perceive a plate as being hard because we have often felt it as well as seen it. It has acquired this meaning for us through association.²

The process of the interpretation of a word or the classifying

¹ The sketch is adapted from one in SEASHORE's *Experimental Psychology*, p. 150. It is more likely to be seen as a rabbit or hare if one looks directly at the right-hand side of the sketch.

² An account of interesting experiments on Perception will be found in F. C. BARTLETT's book, *Remembering*, Chapter II. Various designs and some incomplete drawings were presented for a fraction of a second. Bartlett concluded that sometimes the immediate assignment of a name to the object by the observer determined what was perceived; that temperament and interests may determine the content of perceiving; and that 'a great amount of what is said to be perceived is in fact inferred' (p. 33). See also O. L. Zangwill, *B.J.P.*, 1937, p. 12.

of an object, or indeed of an idea in the light of previous knowledge, is somewhat wider, as exemplified by the following: the idea of a King means something different for an African native, as compared with an Englishman of today or with a Baron of the Norman period. For this interpretation or grasping of the meaning of an idea, and the fitting of it into our existing set of ideas connected with it, the term *apperception* has been used by some psychologists, and it is often a convenient one to emphasize the part played by existing knowledge in the apprehension of something new.

Teachers often fail to ascertain the existing ideas and knowledge of the child and to make sure that they are adequate for the proper apprehension of the new. Time may well be saved in the long run by a thorough preliminary inquiry as to the pupils' ideas or the understanding of terms to be used; for such inquiries may yield amazing gaps and ignorance as we shall see later (Chapter XXI, p. 282).

Imagination and its 'training'. It will be seen that one of the errors in everyday talk about the mind and its powers is the use of one word to describe abilities or processes which are very different. This danger is even more clearly illustrated in the case of imagination, so an early preliminary discussion of that will be useful.

The term imagination is often used in three quite different senses.

(a) *The forming of mental images* is one of the meanings. When I close my eyes and form a mental picture of an absent friend, I get a visual image. When I get a mental replica of his voice, that is an auditory image. To such mental elements we should apply the term *imagery* and not imagination.

Incidentally, we should avoid speaking of imagery as if it were a single elementary function of the mind. For a man may be able to get vivid visual imagery and yet have little auditory imagery. Others may get such vivid auditory imagery of, say, the sound of church bells, that they seem almost to hear them, and yet they may be quite unable to get a good mental picture of the church, however well they may know it. Many people

have only very poor mental images of smells and tastes, though some can get very vivid images of, say, the smell of a rose or an onion. (It would be a useful exercise for the student to make a list of things which can be heard, seen, or smelt; then to compare the vividness of his imagery of these series of objects (e.g., the face and the voice of a friend) and then to get similar reports from friends and compare them.)

There is no decisive evidence that we can increase, by exercise, the capacity to form images. It is possible, however, for a man who discovers that he has a greater capacity for vivid visual imagery than he had realized, to make use of it in remembering certain kinds of things seen, and to do so more than he had been accustomed to. It is generally thought also, that children have, on the average, more vivid visual imagery than adults; this, if true, may be due to the neglect by adults of using the capacity, though it may be due to natural deterioration of which we do not know the cause.

(b) *Reproductive imagination.* The term imagination is sometimes used to indicate the recalling mentally of past experiences, and living through them again. We may call this reproductive imagination. It may include a great many visual or auditory images of things seen or heard, but it may not be confined to those. It may consist partly of silent thoughts expressed mentally in words, or even of imageless and wordless thoughts. But it does not include *new* arrangements of the elements of past experiences. When such new arrangements do occur in our minds we have:

(c) *Constructive imagination.* Suppose I think now of a man with the head of a snake: that is (for me) an entirely new idea: it has not occurred in my mind before nor been suggested to me by another. It is an example of constructive imagination. I may think also of a man with an ass's head; but that is reproductive – for I have seen one recently in Shakespeare's play *A Midsummer Night's Dream*.

Constructive imagination may be concerned primarily with images, as in the example given above. But it may consist largely in new combinations of ideas which may be accom-

panied only by very vague images, or none at all except the images of words. Here again there are many types of such constructive imagination: e.g., that of a novelist who builds up new characters and imagines all sorts of marvellous events which have never actually happened; or that of the poet who vividly imagines the feelings and experiences of men. To a considerable extent these two creators depend upon their own experiences as a basis; but even then they greatly extend them; place them in new settings and so on. Very different is the constructive imagination of the inventor of new machines, or the organizer of a new business concern, or of the musician or painter.

No intelligent person, I imagine, believes that if a man is good at the organization of new business concerns he could necessarily have been a great music composer or novelist if he had tried. Yet we do sometimes meet the fallacy of supposing that constructive imagination is a unitary faculty, which, by exercise in one kind of mental work, can be improved for all kinds. I even heard a very distinguished scientist, whose name is known to the thousands of B.B.C. listeners, in an address to University people, argue that, as imagination was needed for progressive work in science, then it was a good thing for scientists to read poetry and so develop their imagination. No doubt it is excellent for scientists to read poetry to enrich their own lives. But there is not the slightest reason to suppose that reading Wordsworth will help a man to make new discoveries in physics or chemistry. The fallacy of the argument is clearly seen if we reverse it and suggest that reading about inventions of machines will increase a man's capacity to write great poems.

Later we shall see that what we have called constructive imagination is largely dependent on general intelligence, on specific knowledge of a certain department of human thought or activity, and on specific abilities involved in it.¹

Attention and the training of attention. One more example may be given of a supposed general 'faculty'. Educationists often speak of the importance of training the child's 'powers of attention' and 'concentration'. The process of attending and

¹ A further discussion of imagination is given in Chapter XXII.

its relation to interest is so important that we must devote a chapter to it later. Here I can stress only two things.

First, attention is not a separate 'faculty'. The term denotes an activity or attitude of the mind as a whole. It is better to speak of the child attending rather than of the child's attention, though the word 'attention' is often a convenient label provided we bear in mind the above warning.

Secondly, in everyday language the term 'attention' is used to cover the following two very different attitudes or processes of mind:

A. *Spontaneous attention*: for example, when we are quite absorbed in some interesting spectacle or fascinating story, and need make no effort to attend; sometimes, indeed, when an effort would be needed *not* to attend. Clearly there is no special 'faculty' or function needing training involved here. A mere child of two may be as absorbed in a fairy story, and so 'attending' as completely as the most intellectually trained adult.

B. *Volitional attention*: for example, when we are faced with some uninteresting book which we must read for the sake of an examination and we have to 'make ourselves' attend – to 'will' to attend to it and to keep bringing back our wandering thoughts to the matter in hand.

Now the 'training of attention' means something very different according to whether we refer to A or B. As to 'spontaneous attention' this will, of course, occur more frequently the more the child is faced with objects or ideas which interest him. By widening and strengthening his interests (if we can) that will increase the likelihood of spontaneous attention. It may make volitional attention less often necessary, supposing certain things must be studied; but it would not increase the child's capacity for volitional attention to the uninteresting.

Whether the capacity for volitional attention can be increased or 'trained', in the popular sense of the term, is doubtful. We may strengthen the *motive* for forcing attention to an uninteresting mathematical problem by offering a reward for success, or by threatening a penalty for failure; but whether that would increase the pupil's willingness or ability to attend

to other uninteresting things in the future is very doubtful. We shall discuss the question later in Chapter XVII.

The problem of volitional attention is also intimately bound up with qualities of mind which are not merely intellectual: with purpose and persistence and the looking to the future. We shall be better able to consider this question when we have dealt with the motive forces in human nature.

Mental discipline and the doctrine of formal training. These popular ideas about mental faculties have been at the bottom of fallacious ideas about 'mental discipline' which in their turn have greatly affected the curriculum of the schools. I cannot do better here than quote a report on this topic by a Committee specially appointed by the British Association (Education Section).¹ The report was entitled *Formal Training* – the term commonly used to express the doctrine that by one particular kind of training of a supposed 'faculty' (for example, through a particular school subject) one could give a general training of that faculty so that the result of the training appeared in any kind of work which that faculty performed. The report states:

"The traditional view, known as the doctrine of "mental discipline" or "formal training", assumes that the effects of mental exercise are general. It maintains that, by practising a mental capacity on some particular subject, we strengthen that capacity as a whole, and so improve its efficacy for any subject on which it may be employed in future. Thus it has been claimed that the teaching of mathematics trains the "powers of reasoning", so that the child becomes more logical, not only in dealing with other branches of the curriculum, but also in dealing with the problems of everyday life.

"In the past this doctrine has been widely held among teachers and educationists; but during the past twenty years it has been severely criticised on the basis both of general theoretical principles and of experimental results.

¹ The Committee included some of the most distinguished psychologists in this country, including Professors Cyril Burt, Percy Nunn, T. H. Pear, and Godfrey Thomson.

'The current view can be summed up as follows: Transfer of improvement occurs only when there are common usable elements, shared both by the activity used for the training and also by the activity in which the results of that training reappear. The more the influenced and the influencing activities resemble one another, the greater the influence is likely to be. Practice in subtraction will improve accuracy in division, because the latter involves the former, but it may have little or no effect on accuracy in multiplication. The study of Latin will aid the study of French, because many of the words are derived from Latin roots, and because many French methods of work used in learning Latin, e.g., the use of a dictionary, will also be required in learning French.'

'On the other hand, the fact that the functions employed in both training and test are popularly called by the same name - 'imagination', 'observation', 'memory', or the like - is no guarantee that general improvement will be secured. Transfer of training appears, to put it cautiously, to be much less certain and of much narrower scope than once was believed.'

We shall see later that these fallacies about training faculties creep into problems of moral, as well as intellectual, training. I will here only add one delightful example of the fallacy in a discussion of the value of physical exercises. A few distinguished thinkers, who some years ago conducted a valuable campaign in favour of better and more universal physical training, fell into the fallacy of assuming that increase of 'control' of the body increases the power of 'control' over the mind (apart from the effect of the general improvement in health). Indeed, if one may judge from Press reports, even a President of the Board of Education has spoken as follows:

'It was not only in its effect on the body, mind and spirit of the individual that physical education was of value; by requiring the harmonious working of individuals in concert with the rest of their class or team, it aided the *harmonious*

co-operation of man in society and so played a great part in fostering a healthy public spirit.'¹

We have only to imagine the Cabinet solemnly indulging in combined physical exercises at the beginning of their meeting, to increase 'harmonious co-operation', to see the absurdity of this idea. It is an excellent example of the danger of supposing that precisely the same processes are involved wherever we can apply the same common name.

The need for considering the popular interpretation of psychological terms. We shall see later that some psychologists would dispense with the terms 'imagination' and 'memory' – using different words to describe the various processes the terms cover in popular thought. But it is useful, I think, for us to approach these psychological terms (such as 'imagination' and 'memory') from a consideration of their use in ordinary language. For the student will constantly meet this common usage in discussions and should be prepared to point out the dangers and to ask what precisely is meant. Even psychologists sometimes drop into the usage of popular terms, and no great harm is done if the meaning is clear in the particular circumstances and if more precise labels are not needed for the purpose at hand. The important thing is to avoid supposing that all mental processes or capacities called by the same name in popular language are precisely the same in fact: whereas, as we have seen, the term 'imagination' covers several very different kinds of functions which may have very little to do with one another; so that exercise or development of one may not affect the others; and so with 'memory', 'observation', 'attention', and so on.

The meaning of 'habit'. The term habit is a good example of a label which in common speech is applied to various mental processes which are, in fact, very different from one another. It may cover the following:

(a) Mechanical habits of movement – such as have been learned in repeatedly fastening the buttons of a coat, or tying a

¹ Taken from a report in the *Birmingham Post* for 14 October 1933, of Lord Irwin's address in opening the Carnegie Physical Training College at Leeds.

knot. These may become so mechanical that, once started, they 'run off' without our paying much or even any attention to them.

(b) Habits due, partly at least, to a recurrent physiological craving, e.g., the habit of smoking.

(c) Mannerisms, 'nervous habits', or 'tics' – often due to some underlying mental cause, and not acquired by frequent repetition.

(d) Habits of speech acquired by imitation of the speech of others.

(e) Habits of thought – the regular adoption of certain points of view on certain subjects – dependent partly on the individual's special knowledge, and the limitations of that knowledge; partly on his personal sentiments or interests and desires which lead to prejudice; partly to suggestion through the ideas of friends around him, and so on. Such 'habits of thought' are often better described as 'attitudes': they are much less regular and mechanical than the habits mentioned under (a) and (d) above.

(f) Habits of feeling, e.g., the sentiment of affection or hatred towards a person, built up through repeated experience of good or evil at the hands of that person: but also originally dependent on inborn tendencies to feel certain emotions under certain circumstances. The term habit is misleading in this case and there is no need for it; the term sentiment is adequate.

(g) Habits of will, often called 'moral habits' – regular tendencies observable in the type of actions which a man performs when different alternatives are open to him. Here again innate tendencies to act in certain ways under certain conditions, together with acquired sentiments and ideals, may account for an apparent habit, which in such cases would be better called 'consistency of action'.

It will be seen that the term 'habit' is applied in popular speech to very different processes, which we shall consider under different chapters. But a warning must be uttered at once as to some erroneous assumptions:

(1) Mere *repetition* of an action does not lead to its being established as a habit; it needs also some feeling of satisfaction and some success to establish a habit firmly. (This will be dealt with later in Chapter XX, in considering the acquirements of skill.)

(2) It must not be thought that training a boy in a certain 'good habit', say, of politeness in certain circumstances, e.g., politeness towards his teachers, will mean that the habit will necessarily spread so that he is polite to his father or to strangers. Such habits tend to be specific, and need supplementing by the adoption of principles and ideals, e.g., as to consideration for the feelings of all other people, and the building up of a sentiment for these ideals.

We shall have to discuss in later chapters, under different headings, all these various processes popularly labelled 'habits'. All I wish to give now is a preliminary warning as to the ambiguity of this word habit, and against the superficial idea that a general moral training can be given merely through the cultivation of specific habits of conduct, or, indeed, that any habits at all, other than the most mechanical bodily habits, can be inculcated merely by forcing a child through the desired actions.

Note. Further discussions on the transference of training effects in skills will be found on p. 265 and pp. 274, 5, in reasoning on p. 302, and on the general training of volitional attention on p. 223.

CHAPTER III

THE MODERN PSYCHOLOGICAL VIEW OF MENTAL ABILITIES

In the previous chapter we saw that the popular ideas about mental faculties are erroneous chiefly because each supposed faculty is complex, and needs analysing into functions or abilities which are relatively independent. In this chapter we will consider how modern psychology attempts to analyse and regroup the fundamental abilities of the mind.

Following the plan already indicated for this book we shall give a broad preliminary survey of these topics which will be dealt with more fully later. We will begin by considering general intelligence.

General intelligence. The evidence for a general ability is built up as follows. First, if we consider the performance in school of all the boys of, say ten years of age, we find there is a marked tendency for those who are high in one subject, say English Composition, to be above the average in most or all other subjects, like History and Arithmetic. Of course, a boy may have his favourite subjects, and the orders differ somewhat in different subjects. The teacher may notice that a few boys already show a special ability for Arithmetic, and others for English Composition; but if we take a complete age-group, a general tendency does appear for a boy who is above the average in one subject to be above the average in all.¹

Here we have preliminary, but only suggestive evidence of general ability, and it is complicated by the fact that a boy may work harder at his weak subject or get help at home with it, to bring it up to the level of his other subjects. Teachers of older pupils, especially those in the upper classes of Grammar Schools, are apt to be impressed more by the importance of

¹ See C. BURT, *The Distributions and Relations of Educational Abilities*, and *B.J.E.P.*, 1939, 9.

special abilities, e.g., for Mathematics, or for languages. But here we must remember that only the more intelligent boys get into a Grammar School and even of these the less intelligent tend to fall behind in the school: so the boys in the upper classes of a Grammar School tend to be very much alike in *general* intelligence; hence the differences between their performances in various subjects depend chiefly on the differences in their *special* abilities. This point may be easily grasped through the following illustration. If there are ten boys whose legs are all the same length the order of the boys as to height will depend entirely on the varying lengths of bodies, necks, and heads. For 'legs' read 'general ability' and for 'bodies', 'necks', and 'heads', read 'special abilities'.

In addition we must recognize that special abilities – arithmetical, verbal, manual, and so on – seem to mature later than general ability and so become more important after twelve or fourteen.¹

So important is the general ability in ordinary school work that it shows even in handcraft work. The idea that the boy who is a dud intellectually is more likely to be gifted with his hands has been proved to be quite untrue. What is true is that some boys who are intellectually dull have a greater *special* ability for handcraft work than for, say, Arithmetic or English: and when a dull boy does comparatively well in craft work attention is called to the fact, and so the popular illusion is spread that intellectually dull boys are 'clever with their hands'.

It must, however, be added that the orders in Handcraft and Drawing do not resemble the orders in the other subjects (such as English Composition, Science, and Arithmetic) so closely as these other subjects resemble one another. In other words, the handcraft depends more upon some special ability and not so much on general ability as the other subjects do.

Special abilities. As we have seen, there is sufficient resemblance between the performances in the various school subjects

¹ For a discussion of, and fuller evidence of, the supreme importance of general ability over special abilities at early ages up to ten and twelve, see Chapter XXVI.

(including even such different ones as Composition and Hand-craft), to afford evidence that general ability is involved in all. Nevertheless, the orders of merit in, say, Composition and Handwork do differ very substantially.¹ This implies that there are special abilities involved, so that some boys can be relatively high in Handwork in their class, and relatively low in Composition. Similar differences are revealed between the orders of merit in Composition and Mechanical Arithmetic.

In our discussion of memory in Chapter II we saw that the order of performance in the learning and remembering of connected words is very different from that for nonsense syllables, or diagrams. We even found that there is a difference between the remembering of colours and diagrams. Experiments of this kind indicate that there are a considerable number of special abilities, some of them highly specific. For example, it was once thought that there was one unitary special ability which could be labelled 'verbal ability', yet even this has been found to be complex: the ability for understanding isolated words being relatively independent of facility in dealing with verbal patterns, and both of these being relatively independent of comprehension.²

Psychologists do not profess to have traced yet all these special abilities, but a great deal has been discovered. Thus, as we saw in studying memory, it has been found that there is some common function or ability which appears in all kinds of remembering (which we might label sheer retentivity)³ and some further specific functions which are found in some particular kinds of remembering, such as remembering words, numbers, colours, diagrams, and so forth.

Now some of these special abilities are found to function in certain broad kinds or groups of mental work, say the understanding and learning of poetry and prose passages or all kinds

¹ BURT, for example, found they correlated only to the extent of 0·3, whereas Composition and History correlated to the extent of 0·71: *The Distribution and Relations of Educational Abilities* (1917), p. 52.

² C. BURT and E. JOHN, 'Factorial Analysis of Terman-Binet Tests', *B.J.E.P.*, 1942, 12, p. 161.

³ Recent confirmation of such retentivity in rote learning and recall will be found in 'Memory and Intelligence', by J. S. INGHAM, *B.J.P.*, 1952, 43.

of arithmetical work, and so we get what are called *Group Abilities*. The evidence is already sufficient for the existence of the following group abilities:

- (1) Verbal ability – linking all processes in which the use of language is involved.
- (2) A group ability involved in all arithmetical performances.
- (3) An ability traceable in all memorization: with further special interconnections in certain sub-types of memory; for example, (a) remembering words, (b) remembering numbers, (c) remembering shapes.
- (4) Ability in dealing with space relations, diagrams, etc.
- (5) Mechanical ability, entering into both: (a) constructive ability, e.g., assembling mechanisms, and also (b) more routine manual activities.
- (6) Musical ability.
- (7) Aesthetic ability.¹

It must be stressed that these 'group abilities' are not necessarily themselves unitary or elementary functions. They may include, and usually do, *several* more special abilities as we saw above with verbal ability. Thus there is a distinction between mechanical talent, in the sense of (a) constructive ability, and (b) that involved in more routine manual work, although they have a common link through some ability involved in both; and this is special to this group of activities: it is not merely general ability, though that too is involved.

The conjunction in groups of these various special abilities results in certain school subjects being readily classifiable into groups according to the abilities involved. Burt's inquiries mentioned above, for example, reveal the following groups in children of the ages of ten to twelve.

- (1) *Arithmetical group*. There are common special abilities involved in both mechanical arithmetic and problem arithmetic,

¹ See F. C. THOMAS, *Ability and Knowledge*, Chapter VI, for one list of group abilities; also *B.J.E.P.*, 1944, 14, p. 93, for BURT'S most recent list of group abilities. 'Social Ability', included by some psychologists, is certainly a highly complex capacity with which temperamental traits are closely connected, as we shall see in later chapters.

although the two are by no means identical; general intelligence enters far more into the problem work.

(2) *Manual group.* Handwork, Drawing, and Writing (quality).

(3) *Linguistic group.* Dictation, Reading (comprehension), and Reading (speed).

(4) *Composition group.* Composition, History, and even Science when the testing of the science is by questions of an essay type.¹

It must be borne in mind that this grouping refers to the work of children about eleven years of age. It is most important, however, for educationists to realize that a school subject may involve one ability much more at a later stage than it does at an earlier. Thus, mechanical processes (e.g., memorizing tables) are more important in the early stages in Arithmetic (at least after the apprehension of the significance of numbers), whereas in the later stages, general ability and the capacity for grasping relations between numbers become more and more important. Similarly, the special abilities required for Science vary very much, according to whether the science is one in which spatial or other mathematical relations are important, as in Physics, as compared with the early stages of Botany and Zoology, in which these are not so important, and in which learning and remembering names is more important.

Psychologists agree that in such a process as the learning of a foreign language a number of different abilities are involved. First there is the 'general ability' of which we have been speaking; second, an ability which shows itself in all kinds of work involving words (including, say, understanding and writing English prose); and third, a special ability for the retention of word sounds, and so on.

The correlations between the orders in the different subjects vary also according to how the subjects are taught. Thus, if the French work is largely a matter of learning vocabularies and verbs by heart it correlates less with, say, algebra than it does when French is taught more intelligently and involves more thinking.

¹ *Distribution and Relations of Educational Abilities.*

As a rule, correlations between one subject and another vary from about 0·7 down to about 0·2.¹

Innate general ability. It is not possible to estimate precisely the innate element in general ability, though it would be useful as it sets the limit on the possibilities of training. The inborn general ability of a pupil is not shown best by considering his performance in school subjects – even in such subjects as Problem Arithmetic, or English Composition, which do depend largely on this general ability; for performance in school subjects is also so much affected by conscientious study or good teaching. Hence we have a better chance of estimating innate ability by the use of tests which do not depend nearly so much on knowledge or previous training – except perhaps reading simple words which all children of the age tested are sure to be familiar with. For example, tests in Reasoning, such as the following:

John is bigger than Tom and Harry is bigger than John.
Who is the biggest?

Or the test called Mixed Sentences, as follows:

Put these words together so as to make sense:

Dog master a defends good his.

(The student will find further examples of intelligence tests, including some not concerned with words, in Chapter XXI on ‘Thinking and Training in Reasoning’ (p. 292 ff.) and in Chapter XXIII on ‘General Intelligence and Intelligence Tests’.)

Now experiments and statistical work on intelligence tests show that general ability reveals itself especially in tests which involve perceiving and applying relations between ideas or things, and in reasoning rather than in mere learning and remembering.² Also, the tests which reveal this general ability

¹ See C. BURT's 'The Relations of Educational Abilities', *B.J.E.P.*, 1939, 6, p. 50. Burt's results are based on examination tests, not the record of the term's work, and they relate chiefly to children of ten years.

² For the statistical method by which is reckoned the amount of general ability involved in a given test the student must be referred elsewhere. As a beginning he could not do better than read BURT's *The Measurement of Mental Capacities* (1927), pp. 11, 12. Later he should study one of the books on statistics recommended in the Appendix.

most clearly are not those which depend much on special training, such as examinations in English Composition or Arithmetic, but rather special tests which do not depend much on either training or knowledge.

We reach, then, the conclusion that there is a general ability involved in all kinds of intellectual processes, which is not dependent merely on training, but is at least partly inborn. The innate nature of this general ability is also borne out by the strong tendency for children, on the average, to resemble their parents in their 'general ability' as revealed in intelligence tests, even though the parents may be uneducated and the children highly educated. There is also a tendency for children to resemble in intelligence the average intelligence of their parents, even when the children have been removed from their parents' care at a very early age.¹ We shall see in Chapter XXIII that performance in the best types of intelligence tests depends on the innate element to the extent of about 75 per cent. against 25 per cent. on environment and training.

Intelligence tests, specially devised to estimate the amount of this general ability in a child show that it increases steadily up to the age of about fourteen, then more slowly till about sixteen or seventeen. After that it increases only very slightly, if at all (and not at all in the dullest children). Further experience and education usually seem to have little or no effect on this general ability, though there is some evidence that unusually stimulating education at school and university may improve the performance on some intelligence tests well beyond the age of fifteen.² On the other hand, I have found that in difficult tests of reasoning (which it is generally agreed depends more on general ability than any other process) the cleverest boys aged seventeen or eighteen in a large Grammar School will greatly surpass the *average* performance of University Graduates, five or six years older and with five years further

¹ See E. M. LAWRENCE, 'An Investigation into the Relation between Intelligence and Inheritance', *B.J.P.*, Monograph Supplements, 26. The question whether Intelligence Tests test primarily innate ability is further discussed in Chapter XXIII, p. 330.

² See *Studies in Education*, No. 7, Univ. of London Inst. of Educ., Lecture by P. E. Vernon, p. 209.

education.¹ This affords further evidence that 'general ability' is largely innate and depends primarily on maturing rather than on education.

We cannot here further discuss the precise nature of this general ability, except to say that one pioneer investigator – the late Professor C. Spearman – labelled it 'g' and regarded it as a kind of mental energy which may vary with the physical condition of the individual, but which otherwise is invariable and cannot be increased by exercise. Most psychologists nowadays, however, would probably connect mental energy with the emotional or conative (striving) aspect of the mind, rather than with the intellectual aspect.

Mental age and the intelligence quotient. We shall discuss intelligence and intelligence testing more fully later (Chapter XXIII), but there are one or two elementary ideas with which the student should be familiar as soon as possible, the first being that of Mental Age.

Mental Age. When general intelligence tests (appropriate for children of say nine to twelve years) are applied to large numbers of children we find that a certain degree of success in these tests is obtained by, let us say, the majority of ten-year-olds, a greater average success still by eleven-year-olds, and so on. Psychologists are thus able to make an estimate of the standard of general ability which is specially characteristic of the ten-year-olds, another for the eleven-year-olds, and so forth. The average performance of the ten-year-olds gives us the standard for the Mental Age of ten.

This, of course, does not mean that all the ten-year-olds do anything like the same. Some indeed – the mental defectives – are able to do only the tests passed by most of the children at five or six years; whereas other ten-year-olds can do most of the tests suitable for the average child of thirteen or fourteen.

Now suppose a child of ten does as well as the average child of twelve, we say that his 'mental age' is twelve; if he only does as well as the average child of eight, his mental age is eight.

¹ C. W. VALENTINE, *Reasoning Tests for Higher Levels of Intelligence* (Oliver & Boyd, 1954). See 'Handbook of Instructions' for details.

This term is very useful and important in the application of psychology to educational and social problems.

An even more useful measure of the child's ability is obtained in another way. Thus, if a child of eight has a mental age of ten he is two years ahead of the average at eight. What happens to him at twelve years of age? Is he still just two years ahead, and so equivalent to the average child of fourteen? It is found that this is not so. As a rule he is about three years ahead; at eight he was two years ahead (a quarter of his age), and at twelve he is likely to be three years ahead, again a quarter of his age. This proportion – one quarter (of his real age) – tends to remain roughly constant throughout his childhood, and to this proportion, the name *Mental Ratio* is given. This figure is obtained by dividing the child's mental age by his real age.

Thus: $\frac{10}{8} = 1.25$ and similarly, $\frac{15}{12} = 1.25$.

More commonly now the mental ratio is called the *Intelligence Quotient* and is expressed as a percentage; thus, 1.25 would appear as 125. The average I.Q. of all children is, of course, about 100 on reliable sets of tests. An I.Q. of about 150 indicates a very clever child, likely to be one of the very best in a selected secondary school. An I.Q. of below 70 indicates a child who would usually be described as mentally defective – one type of 'educationally subnormal' children.

Distribution of intelligence. It is important that the student at an early stage should get rid of the common idea that children (and people generally for that matter) are divisible into three clearly separate types: (1) the mental defective or very dull; (2) the exceedingly clever or genius type; and (3) the great majority who are pretty much on the same level of intelligence. In fact, it is found that there are no such sharp distinctions between the types and that the gradations from one level to another are virtually continuous. Thus the results as to general intelligence tests, shown in Figure 3, were obtained by investigators on some 2,900 children from different social levels in the United States.¹

¹ The diagram is taken from TERMAN and MERRILL's *Measuring Intelligence* (1937), p. 37.

The graph shows that, while the largest group of the children is that with I.Q.s between 95 and 104, there are large numbers just below this group (85-94) and large numbers just above it (105-114); and then smaller but still considerable numbers just below (or above) these latter limits.

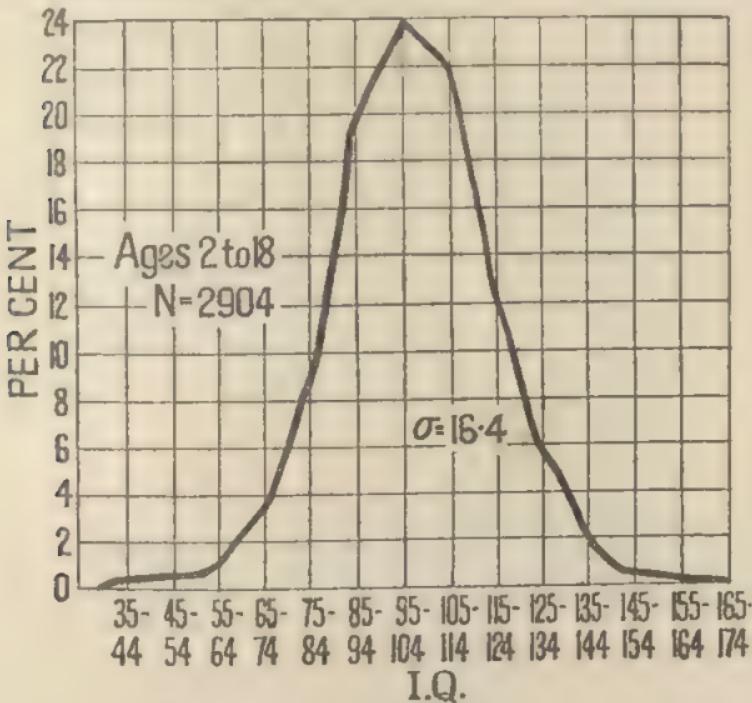


FIGURE 3
DISTRIBUTION OF INTELLIGENCE QUOTIENTS

These curves of the distribution of I.Q.s are similar in shape to the curve, for example, showing the heights of adults. It would be clustered round the average with a gradual decrease in the numbers for those who were very tall or very short. It has been estimated that about 2 per cent. of the general population have I.Q.s of 130 or over, about 12 per cent. of 115 or over, while 2 per cent. are below 70, the level often taken for the application of the label 'mentally deficient'.

We have similar statistics for some special abilities; for example, tests in remembering disconnected words and in the

speed and accuracy of cancelling all the A's in a page of print show a similar distribution.¹

As we have no reason for thinking that high special abilities are given more generously to those with good general ability than to those with low general ability, we may expect all kinds of combinations of abilities: e.g., one boy may have high general ability, very good special abilities for mathematics, poor special ability for handcraft, and so on. This would fit in with the known fact that we do find a few individuals, a very few, who are of very low general intelligence, almost mentally defective, who nevertheless have such high specific ability for routine number work that they can count and do mechanical arithmetical processes with extraordinary facility. Similarly, we find some geniuses with I.Q.s of perhaps 180 or more who are nevertheless very poor in dealing with machinery and other mechanisms owing to their being so lacking in the specific ability needed, and having neglected to train even what they had.

This haphazard distribution of special abilities – independent of the amount of general ability, is concealed from ordinary observation by two things: first, the fact that general ability is so much more important for intellectual work than any particular special abilities, particularly before adolescence is reached. Second, because in most school studies good general ability can compensate to a considerable degree for weakness in some special abilities, so that a boy with good general ability but poor rote-memory for words may do better in French than a boy with a high degree of rote-memory but low general intelligence. Music and drawing, however, are activities in which no degree of general ability will compensate for a low degree of the special abilities involved.

The difference between the modern psychology of mental abilities and the faculty psychology. The thoughtful reader may ask himself whether these modern views as to mental abilities are fundamentally different from the popular faculty psychology. Have we not now merely got a new list of faculties – general ability, verbal ability, and so on? Could we not simply label these 'the

¹ See D. STARCH, *Educational Psychology* (rev. edit., 1927), p. 29.

faculty of general intelligence', 'the verbal faculty', etc., and be pretty much where we were before? No: there are some fundamental differences whatever terminology we use.

(1) First there is one supremely important general ability ('g') and we have no reason to believe that the innate element in this can be greatly increased by exercise. Uneducated youths of fifteen may reveal more 'g' than educated and experienced adults of fifty or sixty.

(2) The specific abilities are far more numerous than the old 'faculties'. The sphere of functioning of each is more restricted in one sense, and yet it may appear in what are at first sight very different types of mental work. Thus 'verbal' ability, as we have seen, includes three independent factors; and one or more of these may enter even into the mental processes involved in solving a maze puzzle.

(3) The general ability and the special or group abilities are linked together and co-operate in different ways from those implied in the old faculty psychology. Thus, in the learning and remembering of French vocabularies we find the functioning of: (a) sheer retentivity; (b) the special retentivity of visual (or auditory) sensations; (c) a verbal factor, or several; (d) the supremely important influences of interest and of motives.

This last point as to interest leads us naturally to a consideration of the motive forces which determine the functioning of all these abilities we have been discussing, and in doing that we must consider also the motive forces underlying the wider sphere of human actions in general.¹

¹ The student who wishes to proceed at once to further study of intelligence and tests of intelligence or of special abilities may turn to Chapters XXIII and XXIV, but it would be advisable to read first Chapter XVIII on 'The Span of Attention' and the section of Chapter XXI headed 'The Apprehension of Relations' (p. 291).

CHAPTER IV

DESIRE AND STRIVING, PLEASURE, EMOTIONS, AND SENTIMENTS

In the last two chapters we have been discussing the supposed intellectual 'faculties' and some facts as to general and special abilities. We left aside for the time other equally important aspects of the mind – emotions, feelings, desires, and impulses. In discussing memory, however, we did stress the supreme importance of interest in learning: and that brings out the fact that the mind tends to function as a whole. One of the main errors of the 'faculty psychology' was that it talked of faculties functioning as though they were isolated capacities, whereas in memory work (for example) perception, language, imagery, and special interests may all be involved.

A further error is made if we forget that even intellectual processes are also prompted and modified by desires and feelings. The idea, now widespread, that there is such a thing as 'wishful thinking' is a sound one. That beliefs and judgements about persons are greatly influenced by feelings is clearly shown in the exaggerated views of the lover about the qualities of his mistress. The doting mother's judgements about her darling child afford another example. The supposedly calm reasoning of keen political party men, with the same facts before them, may lead them to diametrically opposite conclusions, so powerful is the influence of emotion and desire upon thinking.

Apart from this influence of feelings on thought, happiness, character, and conduct are at least as important in the life of man as are intelligence and abilities, and psychology is, of course, just as much concerned with the study of human emotions and with the bases of desires and impulses as it is with the more intellectual aspects.

We turn now to a preliminary examination of these topics, and first we must introduce one or two elementary terms essen-

tial for discussing the relations between intelligence, feeling, and action.

Three aspects of mental process. Psychologists recognize three aspects of a mental process which we may illustrate by the student's experience in reading this book. He is *aware* of the printed words and their meaning, and of the relationship between one sentence and another. He *strives* to understand the general drift of the argument; and he *feels* satisfaction or pleasure as he succeeds, or dissatisfaction if he is hindered or bored.

Popular language has no word to indicate the aspect common to all kinds of knowing or awareness – awareness of things, of imagery and ideas, of the thinking of relationships, even awareness of feelings. The word 'awareness' may seem to come near it, but has no adjective corresponding to it and it does not cover the more active intellectual processes; it does not allow for the movement of thought. All these are covered by the term *cognition*, with the corresponding adjective *cognitive*.

All types of desiring, wishing, mental striving, are indicated by the word *conation*, with the corresponding adjective *conative*. All types of feelings – pleasure or dissatisfaction, and emotions, like fear and anger, belong to the third aspect of mental process, namely feeling, *feeling-tone*, or *affect* with the corresponding adjective *affective*.

These three aspects of any one mental process must not be regarded as three separable functions, though they vary in their prominence. Change in one usually means a change in others; thus the appearance of a beautiful colour in the sky may immediately result in a pleasure I was not feeling a moment ago, and this may lead to a striving to get a clearer view of it: this in turn, if successful, leads to further satisfaction and pleasure; if the effort is unsuccessful it leads to some feeling of dissatisfaction.

Conation and feeling-tone. The relation between these two is of special interest. Let the student consider again his own mental processes in reading this book. If he feels that the effort to understand and to acquire some psychological knowledge is being successful there will be some degree of satisfaction or pleasure.

When he feels baffled and cannot grasp a paragraph, or wonders what on earth this all amounts to, there is a feeling of dissatisfaction or displeasure, and there may be an inclination to stop reading.

Here we touch upon a fundamental law of all learning and habit formation. So far as an action leads to satisfaction it will tend to be repeated, and thus a regular habit may be set up: so far as an action leads to dissatisfaction it will tend to be avoided in future. Of course, other motives may overcome this effect at times, and may even prevent a successful and pleasure-bringing action from ever being repeated. But the general principle remains true; and it is of great importance, not only for intellectual education but also for moral training.

Apart from the fact that the satisfaction gained from an action makes it more likely to be repeated, we have seen that there is a tendency for a conative process to be continued so long as it is moving towards its end, and producing satisfaction, while the conative process tends to decrease if there is lack of satisfaction or too great a hindrance to reaching an end.

That, however, only states the general tendency. Actually matters are more complicated. Consider a man playing a game of golf. If he is a keen golfer the bunkers merely stimulate effort, and success is all the more pleasurable if difficulties are overcome. There would be no pleasure to an expert golfer if there were no bunkers, only a wide smooth course, with holes three feet wide instead of three inches, and with the distance between the holes only fifty yards.

Similarly, there is no pleasure for an expert in chess to play with a mere beginner, unless he forfeits one or two important pieces; the game is too easy, effort is not stimulated, and the enjoyment of the exercise of skill is not experienced.

On the other hand, in both these games, if things are much too difficult we become discouraged and effort ceases.

The application of all this to intellectual work in general, and to school work in particular, is fairly obvious, and one of the main problems of the teacher is so to adjust work to the individual pupil that the latter can make continuous and steady progress and so experience satisfaction, and yet that he should

not find the work so easy as to be boring: that is if it is work which depends for its interest primarily on the successful mental activity – as especially in Arithmetic and Mathematics, problems in science, and sometimes translation from a foreign language. In other words, the pupil must be able to see that he is getting somewhere. This was brought out in an inquiry made by one of my research students among over 9,000 school pupils between the ages of eleven to thirteen as to which subjects they liked most or least. The pupils were divided in their schools into brighter (fast) or duller (slow) classes. Among the slow groups it was found that 60 per cent. of the reasons given by the pupils for their dislike of a subject was the 'failure to obtain results'; and for both groups the satisfaction due to 'achievement' was a most important reason for liking a subject and working at it.¹

Clearly, the question as to whether a conative tendency, when it meets some hindrance, is likely to be merely stimulated or, on the other hand, discouraged and stopped, depends upon the strength of the desire and impulse. If Romeo's desire to get to Juliet is sufficiently strong, then 'locks, bolts and bars' will only intensify his efforts; but if a boy's desire to solve an arithmetic problem is only a mild one, small difficulties will soon lead to his giving up the attempt. Here we see the importance of considering the basic motive forces in individuals as well as the abilities, even when we are only concerned with intellectual work or the advancement of knowledge. What, then, are the fundamental motive forces behind human conduct?

Is conation always directed towards pleasure? In the last section we have implied that we tend to continue activities which are found to be pleasant and to avoid the things that are unpleasant. This indeed will probably be regarded by the reader as a commonplace. It does, indeed, seem to be a general tendency which at all times has some influence upon our actions. It is a basic biological principle that useful things, e.g., good food, adequate exercise, the play of the young, are correlated with

¹ See J. J. SHAKESPEARE, 'The Relative Popularity of school subjects in Elementary Schools', *B.J.E.P.*, 1936, 6, p. 158. We shall discuss more fully in Chapter XVI this research and the whole question of progress and achievement in school work.

pleasure; while harmful things tend to be correlated with displeasure, and if they are very harmful (e.g., the burning of the tissues) give rise to intense pain.

This general tendency is of supreme importance in the development of habits. Those actions which lead to satisfaction tend to be repeated for the sake of further satisfaction, and so a habit tends to be established. Even strong inborn tendencies to act in certain ways, deep instinctive urges, may themselves be strengthened and become still more completely established by the satisfaction and pleasure they bring.

So strong is this general tendency to seek the pleasant that some philosophers have maintained that man is always moved in his actions by the desire for pleasure. This doctrine (Hedonism as it was called) is now discredited. It is realized, first, that our actions are frequently moved by special impulses towards objects and ends apart from our thinking of whether they produce pleasure or not. The success of these impulses as a rule does incidentally bring satisfaction or pleasure; but it does not follow that the actions are carried out *for the sake of* the pleasure. A mother's impulse to save her child at the expense of her own happiness, or even life, is a good example. Here, and in many similar actions, the strength of the impulse is altogether disproportionate to the pleasure felt in the thought of the actions.

The reader may, however, reply, 'Yes, but a mother who plunges through fire to save her child, though she may suffer intensely later, feels at the moment great pleasure in satisfying the impulse to save; or, at least, she avoids the intense displeasure of seeing the child remain without help.' We may agree, and yet maintain that the actions are not done *for the sake of these pleasures*; but apart from that, the very fact that these strong impulses result in such immediate satisfaction, that they determine the action of the moment, is itself an argument in favour of the views presented in later chapters, namely, that strong innate tendencies are dominant factors in human actions.

Furthermore, we should note that, to a very large extent, the gaining of pleasure depends upon our aiming at some definite end other than the pleasure to be gained. For the full enjoyment of a game of football a man must not keep thinking, when

the ball is approaching him, of the pleasure he will experience if he kicks it accurately. He must desire intensely the victory of his side, and that he should contribute to it his best. Then the pleasure of successful effort will come.¹

Some philosophers have held that, whether or not all our actions are determined by the seeking of pleasure, nevertheless, it is *reasonable* that man should seek his own pleasure, or at least his own 'happiness', which is a wider term. It may, on the face of it, seem irrational for a man to act otherwise than in accordance with the careful calculation of what will lead to his own happiness, but he certainly often does so act. Sometimes he seems to care more for the happiness of others than for himself. Sometimes he acts foolishly (for example, when under the influence of intense anger), in a way which is disastrous to the happiness both of himself and of others.

The explanation of these apparently irrational actions, if they need explanation, must be sought in those impulses and emotions of man which frequently move him to actions without a full consideration of their consequences, and this also leads us to discuss the emotional, instinctive, and other inborn bases of man's actions.

The emotions. Here we will deal briefly with emotions, as they are examples primarily of feeling. In popular language the word 'emotion' covering such experiences as fear, anger, joy, sorrow, etc., usually means a feeling which has become specially intense; joy, say, meaning intense pleasure. Usually, no doubt, feeling does become much more intense in emotion; but intensity of feeling is not essential. We can have a slight fear and some small degree of joy or sorrow, and yet recognize that the feeling is of the special type to which we can give the name **fear or joy.**²

¹ We have not much space for a discussion of this doctrine of Hedonism. If the reader feels that the criticism is inadequate as well he may he should read H. SPENCER'S discussion in *The Methods of Ethics*, Book I, Chapter 4; also W. McDougall's *Social Psychology*, 9th edit., pp. 364-75.

² With strong emotions there are usually marked physical changes, such as stronger heart-beat, deeper breathing, trembling, and so on. Some psychologists have even maintained that the specific bodily changes are the *defining* emotion. On this and the physiological correlates of some emotions, see Chapter XXXVI, especially p. 614.

A man under the strong emotion of fear has an impulse to fly from the danger or conceal himself, and so forth. If very angry, a man has an impulse, perhaps, to strike the one who has angered him, or to vilify or denounce in forceful language, one who has angered him in speech. Certainly a man under strong emotion usually tends to seek an outlet for it and to express the emotion. If the anger is only through a man's tripping over a step and bruising his shin he may express it through a curse, which is in itself a kind of breaking through convention.

Hence, some psychologists prefer to regard an emotion as a general state which includes some tendencies to action. Personally, I think it is simpler if we confine the term to the *feeling-tone* of certain states, though some emotions are undoubtedly closely linked with innate tendencies to act. There is more reason for keeping the concepts distinct because the actions connected with an emotion often vary so greatly. Indeed, a man may show pugnacity with little or no anger; he may attempt to escape from danger when feeling little or no fear, and when an attempt to escape from danger is going satisfactorily, the fear tends to disappear.

Furthermore, if we consider, for example, anger we find that it is apt to be roused especially when a man is frustrated in some endeavour which he keenly wishes to carry out. Such action may be directed towards bodily comfort, or to escape from danger, or to the protection of his child from injury, and so forth. In other words, the arousing of anger in such cases presupposes some other impulse to act and not merely the impulse to fight or destroy. So we are still left with the need to examine the most fundamental impulses to act, the innate and possibly instinctive tendencies in human nature. These we shall discuss in the next few chapters, and we shall see how often emotions are closely linked with them.

First, however, we must warn the student against a common confusion between some emotions and sentiments.

Emotions and sentiments. In popular language the word 'love' is frequently used to describe the emotion which the mother feels at the moment of tending her helpless babe, or which the lover feels in an embrace with his beloved. The word 'love',

however, is used in a wider sense when, for example, we speak of a man being 'in love'; this describes a whole attitude and, for a time, a continuing disposition or attitude. A man who is in love with a girl tends to feel joy in her presence, sadness in her absence, fear if she is in danger, anger if anyone injures her, and so forth. In this sense of the term the word 'love' is what psychologists call 'a sentiment': i.e., a more or less permanent disposition built up through experience, to feel various emotions in relation to a person or thing, according to varying circumstances.

We have already seen in Chapter II the danger of regarding intellectual processes as the same merely because in popular language they are given the same name. The danger is much greater in connexion with feelings and emotions because these are usually so blended one with another; and in any case, feelings are vaguer and harder to detect and describe. For the sake of exactness, psychologists must sometimes devise special terms; for example, the one generally used for the emotion accompanying the mother's protective impulse towards the babe, or the lover's towards his beloved, is called 'tender emotion', which leaves us the word love for the more permanent sentiment.

The development of a sentiment. The term 'sentiment' in the sense used above by psychologists, covers such attitudes as love, hate, admiration, and respect. The development of these sentiments – what we might call a permanent association or organization of interests and certain types of emotion in connexion with some person or thing (e.g., the house we were brought up in, or our old school) is an important topic in educational psychology. It is not difficult to see how, say, a general attitude of fear may arise if a child is roughly treated by a teacher; and if this is repeated a number of times the child will come to expect the treatment or at least think of it when he sees the teacher, by mere association. Finally, he will come even to feel something of the fear when he only thinks of the teacher. In other words, he now has a constant tendency to feel the fear when he sees or thinks of the teacher. This would be better described as an associated feeling rather than as a

sentiment, because only one emotion is concerned; but such an experience would soon widen to the sentiment of hatred, in which the child would tend to feel pleasure if the teacher was discomfited. The sentiments of love, admiration, and respect (for others) and of self-respect are complicated dispositions which we can better understand when we have studied individual innate tendencies and emotions, to which we proceed in the next chapter.

CHAPTER V

ARE THERE HUMAN INSTINCTS? THE INNATE BASES OF CONDUCT AND 'DRIVES'

In our last chapter we saw the need to trace some fundamental motives in man's conduct. We discussed conation and its relation to feeling tone, but we are left with the question 'Why should man desire to do certain things or strive in certain directions rather than others?' Is he driven to them by inborn tendencies? Among psychologists there is a general agreement that man does possess some impulses or tendencies of an instinctive type (or at least some strong innate 'urges' or 'drives') even if they cannot be labelled 'instincts' in the sense which some biologists understand that term. To a considerable extent indeed the discussion as to whether man possesses instincts turns upon the meaning which we attach to the word instinct, and it may be well to discuss some of these meanings first.

Certainly one common usage of the word 'instinctive' should never be followed: for example, when a man, wounded in the right hand, says that shaving with the left hand was very hard at first, but that now he does it 'instinctively'. Here it is equivalent to 'from habit' or 'mechanically'; it is certainly not instinctive in any proper meaning of the word.

What is an instinct? What the biologist usually understands by an instinct we may best show by an illustration from the animal world; for all are agreed, biologists and psychologists, that instincts are most easily observed in animals, where they are least obscured and modified by higher mental processes. Of course we cannot assume that because instincts are present in animals, they are therefore to be found in man; but some familiarity with instincts in the animal world will help us at least to look out for similar inborn tendencies in man, and we may

reasonably expect some resemblance if we agree that man is a product of evolution in the animal world.

An excellent example of instinct is that of the Mason wasp. The wasp makes her nest (like a little cave) in a mud bank and there deposits her eggs. She brings to the nest caterpillars which she has stung so that they die or are at least paralysed; then she seals up her nest, and when the eggs are hatched into grubs they find a good supply of food in storage. Now this action of the wasp takes place efficiently the first time it is performed. The mother wasp has never seen it done before, and there is no experience to show her the value of the storage of the food. Here we see the two main principles of the biological conception of instinct: first, an innate impulse to act in a certain way, fulfilling some biological purpose; second, an innate mechanism for efficient acting which is not dependent upon experience.

Such neat examples of instinct are best seen among insects, but there is clear evidence of instincts occurring in higher types of animals, although behaviour is then more complicated through the co-operation of elementary intelligence and more apt to become modified by experience.

Distinction between instincts and reflexes. The modifiability of an instinctive action by experience is one of the things which distinguishes an instinct proper from a reflex. A reflex action is an automatic response, like the blinking of an eye when an object suddenly approaches it or a sneeze when the nose is tickled by pepper. Reflexes are not guided by consciousness, even if they are accompanied by consciousness: whereas instinctive actions are guided by the animal's perceptions and modified by his success or failure. An animal, in seeking his prey or his mate, goes through a complicated series of actions which may be very different on one day from what they were on a previous day. This is something more than a mere reflex response.

Further, the actions prompted by an instinctive urge are improved by experience. A little duck's first plunge into the water may be rather clumsy, as I have myself noted; but very soon he learns to glide in gracefully.¹

¹ I have discussed the distinction between reflexes and instincts in detail in *The Psychology of Early Childhood*, Chapter VIII; see also G. F. Strout, *Manual*

Some experimental work with animals may make it appear that even reflexes are modified by experience and are a means of learning. Thus Pavlov experimented on the secretion of saliva in the mouth of a dog at the sight of food. He found that if he repeatedly rang a bell at the same time that the food was exposed to view the dog's mouth would finally secrete the saliva when the bell rang, even if the food could not be seen. Pavlov called this a '*conditioned reflex*', though the term '*associated reflex*' would be more appropriate.¹ (It is worth noting that if, later, the bell is repeatedly rung *without* the reward of food the association finally disappears.) This type of associative reflex is of little importance in human experience; though, as we shall see, innate (instinctive) impulses and associated emotions are frequently roused by something which has been associated with the original and normal stimulus, as when the ardent lover suddenly thrills at the sight of his mistress's glove.

Instincts and intelligence. Among animals, intelligence and the results of previous experience act as guides to the actions which the animal performs in response to its instinctive impulses. The hunting animal, for example, will learn by experience to recognize even more readily signs of the presence of its prey, and to modify somewhat its way of proceeding in accordance with that experience.

Usually, instinctive impulse is stronger than any dawning intelligence as a *determinant* of animal conduct; indeed, an instinct may function quite absurdly. Mother monkeys, for example, have been known to persist in carrying about with them the body of a dead infant for several weeks after death; and a tame squirrel will continue to hide nuts under a carpet, although in his experience food has always been forthcoming. In the case of man, however, intelligence not only guides instinctive tendencies but also considers the value of the ends to which innate tendencies are driving him, and so intelligence often leads to a checking of a particular impulse. Nevertheless,

of Psychology, 5th edit., revised by C. A. MACE, Book 3, Chapter 2, and W. McDougall, Outline of Psychology, Chapters 2 and 3.

¹ PROFESSOR SIR CYRIL BURT comments that Pavlov's original term was '*conditional*', the word '*conditioned*' being a slip of the first translator.

impulse sometimes drives him to act in a way which his calm judgement condemns as foolish.

The essential qualities of instinctive tendencies in man. When the young duck makes his first plunge into water the mechanism involved in swimming suddenly begins to function. He does not have to learn it slowly and by determined effort like a boy learning to swim. As to man, however, even those who assert that there are human instincts proper, agree that there are not such inborn ready mechanisms for special kinds of actions, such as function in the swimming of the duck or those of the Mason wasp, described above. Those who maintain that there are human instincts, stress rather three other aspects, as follow:

(1) First there usually is an *inborn tendency to notice*, and to be keenly interested in, certain specific kinds of things: an interest not due merely to previous experience. This appears clearly in animals. For example, a baby kitten, never having caught or even seen a mouse, will prick up its ears and become rigid when it hears a slight scratching noise, especially if the source of the noise is hidden from it. Or again, the young kitten will be intensely interested by a slowly moving, small object, such as a piece of string, if one draws it across the floor. Such things cannot possibly be explained by previous experience.

So in the young child we find, for example, keen attention to strange, and especially loud, noises, with signs of fear and distress, though the child has never had any experience, pleasing or otherwise, of loud noises. Again, when sex is maturing, the youth, sometimes with striking suddenness, finds his admiring attention constantly fixed on a girl in whom he has hitherto taken no interest. The young mother's attention is continually drawn to her baby — he absorbs almost her entire interest: his cry is noticed even in the midst of a noisy household. This is one side — the cognitive aspect — of the maternal propensity.

(2) Second, there is in the instinct *an impulse to act in some way* when these types of objects are noticed. This is seen in the kitten's cautious exploring of the apparent source of the hidden scratching noise. It is also seen in the infant, who will show in-

tense curiosity about some strange object which has appeared in his nursery, and will seek to examine it.

The instinctive impulse is constantly shown by the mother who rushes to her baby when he cries, and she is often dominated by an inner urge to be always doing something for him, and fussing over him; and if he is in danger, many a mother will, without thought of her own safety, endanger her life to save the child.

(3) Third, there is often some *feeling of excitement or special interest* which accompanies the attention to the selected objects and the urge to appropriate actions. There is apt to be an intense feeling-tone, sometimes with a special quality of feeling which justifies the name 'emotion'. This is clearly shown in the fear felt by the infant at a loud noise, and in the emotion of the youth when he is strongly attracted by a member of the opposite sex. Emotion is also often prominent when pugnacity is aroused. If a man is undeservedly attacked, anger is likely to flare up and he hits back. The mere babe of twelve or eighteen months, if his arms are tightly held, goes red in the face, yells with every appearance of rage, and at a later age when so held, or perhaps smacked, he will not only scream but will often hit violently back. Emotion, however, is by no means so clearly present in the case of mere curiosity and some other impulses which seem to be genuinely innate.

'Instincts' or 'innate tendencies'? Now psychologists generally are agreed that in man there are found some innate tendencies to notice and be interested in certain kinds of impressions, and to act in response to them in a way not prompted by experience. Those who object to calling these tendencies instincts usually do so because they would confine the term instinct to something more mechanical; to impulses and actions which are, as in animals, much less guided by intelligence or modified by experience, and which seem much more universal. They hold that to speak of human instincts is apt to mislead people, and to suggest too great an inevitability and permanence in human motives. It seems hardly worth while contending for the use of the term 'instinct' when 'innate tendency' will serve

our purpose, provided we recognize that some innate tendencies in man provide a similar powerful urge to those of instincts in animals.

This concession is made here in order to present the student with a view which would have substantial support among British psychologists. Many would, I think, prefer to retain at times the word 'instinct', and I shall occasionally use the term 'instinctive tendency' to bring out the resemblance between some impulses in man and those among the higher animals.¹ On the other hand, some prefer to use the term 'drives' in connexion with human motives, as covering not only any innate tendencies, but also the results of their modification by experience. (See later in this chapter, p. 64.)

Innate tendencies in man resembling instincts. We have already mentioned the following as innate tendencies in man: sex attraction and sex activities, fear and escape from danger, pugnacity and anger, curiosity and exploration, the maternal impulse – better called the protective or parental, as it is shown also by fathers, and indeed by most persons towards the very young or helpless.

There are several other tendencies which seem to have an innate element, of which the most important for our purposes are the following: (a) the gregarious tendency revealed in the impulse to seek the herd or group; (b) the self-assertive impulse

¹ In the important Symposium on, 'Is the Doctrine of Instincts Dead', *B.J.E.P.*, 11, 12, and 13, it is worth noting that Burt, Drever, Myers, and Thorndike argue in favour of the existence of human instincts; Pear and P. E. Vernon are sceptical and critical. Even the American psychologist who has taken a lead in criticizing the view that there are in man many genuine instincts, admits that the fundamental motives underlying man's attitudes and actions are sometimes of so primitive and unorganized a nature that they may be called instinctive. See G. W. ALI PORT's article on 'Attitudes' in *Handbook of Social Psychology*, edited by C. MURCHISON, p. 819.

It is curious to note that Wm. McDougall (who was responsible more than any other British psychologist for the spread of the view that instincts were supremely important in human life) finally (in his later book, *The Energies of Men*), labelled them 'innate propensities' in order to avoid futile controversy; while Professor G. F. Stout, who ably criticized some of McDougall's views, finally came round to the view that it was best to use the term 'instinct' for man's innate tendencies. PROFESSOR JAMES DREVER has shown that the original meaning of 'instinct' was not the narrower usage of the biologists. See his valuable study, *Instinct in Man*.

shown in the strong persistent effort to gain one's own way, or to win the victory in a contest, mental or physical; (c) the self-submissive impulse shown in the tendency to submit to the leader or to those who are felt to be dominant.

Some would also add as innate tendencies, (d) the acquisitive or collecting impulse shown in its extreme form by the miser who clutters up his home with all sorts of odds and ends, and by the boy who collects tram tickets or engine numbers, etc., without any very apparent use or purpose; (e) the constructive or manipulative impulse – shown in the love of making things; and (f) a tendency to feel disgust or repulsion at some kinds of foods, smells, or sights.

There are in addition some important innate tendencies of a more general kind, e.g., imitation and sympathy. These have not usually been classed with *instinctive* tendencies, on the ground that the stimuli which rouse them are not so specific as those which rouse instincts proper.

All the above-mentioned innate tendencies we shall discuss later individually in detail. Here we will consider briefly the general question: 'How can we tell whether in man a certain tendency to act and feel has a genuinely innate element in it, however early in life this may be modified (checked or intensified) by experience?'

The main clues to innate tendencies. The clues are as follow:

(1) The observation of the tendency in early infancy when experience could not explain it: as when an infant cries at a loud or strange noise though the noise has never been associated with pain or displeasure in his experience.

(2) The impossibility of explaining how any action or feeling could arise unless it was originated by an inborn tendency. For example, the sudden glow of feeling when a youth first falls in love, with a strong impulse to be extravagantly kind to the loved one; or the repulsion from slimy creatures and the tendency to feel disgust.

(3) The frequent impelling towards actions, even in adulthood, which clearly go contrary to the person's own interests and welfare; as when a man in anger speaks insolently to his

employer and loses his job; or a soldier who openly runs away in fear from the enemy even when he knows it would be safer for him to lie still and avoid observation; or when an intense impulse of curiosity drives a man to go and look at some ghastly accident, though he knows it will do him no good but will be a sickening sight.

(4) Evidence is afforded that a certain tendency is innate rather than due to environmental influences when there is a specially marked resemblance in respect to that tendency between parents (or other relatives) and children who have been brought up away from those parents or relatives.

"Time after time [writes Burt], when a young girl has been found to be committing repeated sex-delinquencies, it is learnt that relatives in her family whom she has never met, and, it may be, never even heard of, have been characterized by a similar over-sexed constitution. Much the same coincidences are discernible in the case of other tendencies associated with the traditional list of instincts - migratory tendencies, pugnacious tendencies, tendencies to depression, anxiety, assertiveness, submissiveness, and the like.'¹

Such evidence suggests that these tendencies are largely innate - the abnormality being in the family stock.

(5) Even when an extreme degree of some tendency or impulse in a child, such as sex, or aggressiveness or sympathy, cannot be found in parents as well as in the child, that extreme degree itself points to an innate tendency when the home and social environment and training have been very similar to that of brothers and sisters who show no such abnormality. I found, for instance, the enormous differences in certain tendencies in my own five children quite inexplicable except on the assumption of great inborn differences.²

Individual differences in innate tendencies. Some psychologists demand as one mark of an instinct that the tendency shall be

¹ Quoted from article by C. BURT, 'Is the Doctrine of Instincts Dead?', *B.J.E.P.*, 1941, II, p. 169.

² I have given a table indicating their differences in *The Psychology of Early Childhood* (3rd edit., 1946), Chapter I, p. 29.

found in every member of a given species. This seems to be true of animals, though even among these the strength of the tendencies seem to vary: for every poultry farmer knows that some hens make good mothers and some do not. In man, however, the innate tendencies seem to vary greatly in their strength in different individuals, especially those tendencies which are not of fundamental importance for the life of the individual or species. There is evidence of this in the first years of childhood, and it is only what we should expect from our knowledge as to other inborn individual differences, intellectual and physical.

Even in vital physical functions, nature allows great individual variations. We sometimes find, for example, extreme inborn defects in such essential parts as the brain, abnormalities in organs so essential to life as the heart and some important glands, which may lead to death within a few days of birth. If such variations still occur in functions so important for life itself — useless and dangerous variations which even the passing of countless generations (in which such variations have proved fatal) has failed to eliminate, can we put any limit to the extent to which nature allows variations in far less important matters — for example, self-assertion and self-submission, anger, fear, affection, suggestibility, and so forth?

As we have already seen there are also great individual differences in inborn general ability: some infants at twelve months or less are found to be congenital idiots: others, before two years, show clearly that they possess a high degree of innate general ability. Hence we should surely expect similar great individual differences in instinctive tendencies, and direct observations of infants of twelve to twenty-four months already reveal these. Thus among a group of babies, all in good physical health, being brought up in the same institution, it may be noted that some are good tempered, others quickly annoyed, some are gay and happy, others quiet and morose, and so on. Further evidence is gained from the great differences in temperament often found between unlike twins, though brought up under the same home influences.

When we consider adults we also find great differences

between individuals in tendencies which are certainly innate. Even the fundamental sex impulse seems to be almost lacking in some persons, especially in some women, while in some persons it becomes an overwhelming passion which drives them to defy all social condemnation. Even in the development of the bodily organs of sex there are great individual differences. Thus menstruation in girls has been known to begin as early as three and a half years; in others only at twenty-three years or later.¹

As to differences in the strength and persistence of the sex impulses, voluminous evidence is given by Havelock Ellis. He gives records, for example, of a married couple who had indulged in sex intercourse as often as every day for twenty years (apart from menstrual periods and late pregnancy) while some men (with no moral scruples about it) have found no inclination for intercourse oftener than once a month.²

All these differences illustrate what we may call a kind of clumsiness in nature's adaptation and provision of abilities and innate tendencies. Whether we consider physical or intellectual traits, or innate tendencies, we find that some of these prove quite inadequate in some persons for the purposes they serve in most people, or to use a popular figurative phrase, the purpose for which nature apparently 'intends' them. On the other hand, in some persons certain abilities or impulses are much stronger than they need be. It would seem as though nature can only provide a fair average strength in the majority by making some of these inborn gifts more generous than she need, and others much more scanty than are desirable.

For example, consider the human voice. The values of this

¹ See A. GESELL, *Infancy and Human Growth*, p. 255, and L. HOLLINGSWORTH, *The Psychology of the Adolescent*, p. 21.

² HAVELOCK ELLIS, *Studies in the Psychology of Sex*, 6, p. 536. Some specific effects of the secretions of sex glands are referred to later in Chapter XXXIII (Adolescence, Part I), p. 538. The close dependence of sex desires on glandular secretions is one indication of the possible connexion between the endocrine glands and some innate tendencies. In Chapter XXXVI (Mind and Body) we shall see that variations in the activities of some of these glands are associated with fluctuations in emotions and impulses. If, in fact, some of the fundamental tendencies in man which we have listed above prove to be dependent on endocrine glands, or on other specific physiological conditions, that would be further evidence that they are not merely forms of response which have been acquired and learned.

for communication are obvious, and beauty of voice is, no doubt, one factor in influencing sexual selection. Yet nature provides some women with voices resembling the corn-crake, and at the other extreme she produces a Tetrazzini. Or consider musical ability; this would seem to be largely a by-product of evolution, and it appears in extreme degrees. Some children can never sing more than a few notes in tune, if that. Some, at three or four years of age, are already musical geniuses like Bach. Yet this brilliant musical capacity can scarcely be regarded as having biological survival value. Similarly, extreme gifts or talents of many kinds – artistic, mathematical, etc., are constantly appearing. Of course, in some cases where spontaneous variations are themselves found to be useful to the survival of the species they may finally become established and emphasized by hereditary transmission.

We must expect, therefore, to find in innate tendencies some examples in which the tendency is far stronger than is necessary or even desirable, and other cases in which it is extremely weak. This fact is of special importance when we have to study or deal with 'difficult' children or juvenile delinquents or adult neurotics.

The spread of innate tendencies in man. Another general characteristic of innate tendencies must be mentioned. They may begin as fairly definite, specific impulses responding to certain selected stimuli, and then, by association, spread to others. For example, the infant who starts at a loud noise may eventually show signs of fear at the mere sight of the object that caused the loud noise. Here is something very like an 'associated reflex'. But sometimes the spread is wider: as when the maternal impulse, primarily directed towards the mother's own child, reveals itself also towards other helpless babies: or when the pugnacious impulse, primarily aroused by physical opposition, widens its object to contending against mental opposition in fierce argument: these are extensions which do not seem to depend on mere association, but on some element of resemblance in a certain situation to that which normally stimulates the more primitive instinct.

This widening of the range of objects which stir an innate

impulse is a very important fact for educational and social problems; we shall consider it as we deal with certain individual tendencies, but most fully under the heading of 'Sublimation' – the term given to the process by which an innate impulse is deflected to a higher level than that of its original primitive objective; as when a man fights for justice for the oppressed instead of physically fighting his enemies.

The modification of innate tendencies by experience. In man these innate tendencies are modified by experience to a greater degree than they are in animals, though in the higher animals experience and training may have considerable effects. Thus even the dog's strong impulse when hungry, to snatch at a tempting morsel placed on his nose, may be checked by his master saying 'Wait for it': rewards and punishment have set up an even stronger tendency for the dog to obey his master. In man there is always at work the general tendency for any pleasure resulting from an action to make it more likely for the action to be repeated and for resulting pain or dissatisfaction to make it less likely to recur. Thus actions due to innate tendencies in early years are constantly being still further stamped in by repeated success and satisfaction, or checked and modified by failure or displeasure. In a later chapter we shall see how they are also checked and modified by one another.

Moral training, social convention, and tradition may exercise such a powerful influence on the overt expression of innate impulses – especially of sex and aggression, or of fear – in military or civilian war service – that an observer may think them completely destroyed. But they may still cause much internal conflict, or they may find expression in less natural forms; or even if repressed from consciousness, they may continue to influence feeling and action unconsciously, as we shall see in Chapter X.

'Drives' and innate tendencies. Some psychologists, especially American, prefer to use the term 'drives' or 'urges' or 'need-reductions', rather than instinctive or innate tendencies, because of the difficulty of analysing out any innate elements in the tendencies concerned, at least, after the first year or two of life. Some psychologists, indeed, would hold that apart from

such fundamental biological 'needs' as those for food or sex satisfaction, 'motivation' (to use a prevalent term) is almost entirely due to environmental experience and training. Such writers, however, will often be found, on careful scrutiny, to slip at times into statements which imply some other original innate impulses in early childhood, such as assertiveness or imitation. Those who emphasize the influence of social environment, sometimes fail to consider the evidence from the study of infants in the first year or two years, as we shall see directly some of the anthropologists do. It will, I think, be found in the chapters following, that due place is given to the great influence of environment and training on the raw material of innate tendencies.

Temperament. All the emotions in man, and his special susceptibilities to the stimuli that rouse them, together with his innate tendencies to various kinds of actions, constitute his temperament. Experience can, as we have seen, profoundly modify these, but we may regard temperament as primarily due to innate tendencies and endowment.¹

The general temperament of an individual is determined not by the mere addition of his innate tendencies, but by the relative strength of one compared with another, and by the general balance of all the various tendencies. Thus, it sometimes happens that the possession by an individual of a very strong self-assertive impulse may be happily balanced by an equally strong tendency to sympathize and to protect and help: whereas in another case an over-powering self-assertive impulse, combined with marked lack of the protective impulse, may produce a much less desirable temperament and finally a

¹ Even G. W. ALPORT, a leading American critic of the view that instincts proper are important in man, states, nevertheless, that man's temperament is 'dependent on constitutional make up and therefore largely hereditary in origin'. He defines temperament as 'the characteristic phenomena of an individual's emotional nature, including his susceptibility to emotional stimulation and his customary speed and strength of response', and 'the quality of his prevailing mood'. *Personality*, 1940, p. 54. It will be seen that his definition above, I include the tendencies to act, and not merely feelings and emotions. Here following Luria, *The Social Mind*, and other psychologists. But Alport's phrase, 'Speed and strength of response' would readily imply action too. See also note at end of this chapter.

greatly inferior character. This important problem of the balance and co-ordination of tendencies will be discussed in Chapters XII and XIII.

Anthropological evidence about innate tendencies. Anthropologists have found that some primitive peoples reveal very different degrees of pugnacious or acquisitive behaviour. Thus one tribe will be fierce and aggressive, and will admire especially the strong fighter. Another tribe will set up mildness and peacefulness as an ideal; pugnacity will be frowned on, and the tribal behaviour as a whole be most pacific.¹ The inference which some writers draw from these facts is that man's behaviour is largely determined by his social environment, and the pressure of tribal customs and beliefs, and that instincts are of relatively little importance. This view calls for several comments. First, psychologists, like McDougall and others I have recently referred to, who have emphasized the importance of instinctive tendencies, have never questioned the profound influence which social environment may have on innate impulses. They have indeed admitted, as we shall see in a later chapter, that even a strong impulse like sex may be entirely repressed; and everyone knows that in civilized communities the aggressive tendencies are not usually allowed their more primitive outlet of physical violence, but are deflected into mental conflicts on a higher level.

We do not indeed need to visit primitive tribes to study the effects of custom or tradition and training. We have within our own national history, and indeed in contemporary groups, evidence of such great influences. We need only recall the Puritans, and the gay life of courtiers, against which their ideals and beliefs were a protest. Yet the 'culture pattern' of the Puritans did not eradicate, but only concealed or repressed the strong passions of the flesh against which they fought. The jingoes and the pacifists afford us another example; yet the pacifist may be, and often is, very aggressive, but his pugnacity takes the form of verbal instead of physical attack against his antagonist.

¹ See, for example, MARGARET MEAD's *Sex and Temperament in Three Primitive Societies*.

In primitive societies the influence of custom and tradition tends to be stronger and more uniform than in a civilized community where there is more freedom for individual thought and custom, and where rival groups adopt very different views.

'In more primitive communities, such as we find among savages, the general stock of ideas is assimilated by each individual, and all are its guardians, though the old men are in this respect more important than the young. Thus the pressure of society upon the individual is incomparably more coercive. Any private rebellion against inherited and accepted tradition would be resented and suppressed with great speed and certainty.'¹

A second general criticism one can make of some anthropologists who belittle the importance of innate tendencies is that they do not pay sufficient attention to the behaviour of very young children in primitive communities. It is only in infancy that we can see most instinctive impulses in their natural form. Sometimes, however, such anthropologists themselves provide us unwittingly with evidence of the innate bases of behaviour. Thus Margaret Mead, in describing the typical boy in New Guinea, writes:

'The little boy who slapped his mother in the face, demanded pepper-leaf from his father and angrily threw it back when his father gave him only half, who refused to rescue the dog's teeth for his mother, who stuck out his tongue when he was told to stay at home and swam away under water, has grown to manhood with these traits of insubordination, unco-operativeness, lack of responsibility unmodified.'²

It is in these early years, before the social doctrines and customs have coerced him into conformity, that one sees the 'natural' man and can trace the genuine instinctive trends.

¹ See *A Manual of Psychology* by G. F. STOUT (5th edit., 1938), revised by C. A. MACE, p. 580.

² *Growing up in New Guinea* (Pelican Books, 1942), p. 118.

A third comment on the school of anthropologists we are considering is that the danger is great of an observer from another type of society being misled by what can be *seen*, and getting an incomplete account (even if the native language is mastered) of what is *believed*. A stranger from some primitive communities, who visited this country in Victorian days, and was restricted to certain social circles, might very well have concluded that the sex impulse was largely absent from most young men up to the age of twenty or twenty-five. Margaret Mead indeed, who has been most active in minimizing the influence of instincts, herself remarks of the Manus she studied, 'All my comments on sex must be so qualified because in such a puritanical society it is difficult to rely on any kind of information about sex.'¹

Finally, let me quote the summing up of a distinguished Professor of Anthropology as to innate and environmental influences in human behaviour. He writes:²

'It must be admitted at once that the observation and recording of data on personality in non-European societies is still fraught with great difficulty. It is hard enough to get reliable material in our own. The development of accurate, objective techniques for personality study is still in its infancy.'

Nevertheless, 'there seems to be abundant evidence that neither innate abilities nor environment can be regarded as constantly dominant in personality formation'. Margaret Mead herself admits the fact that innate tendencies are sometimes so strong in certain individuals that they burst the bonds of tribal customs and tradition; and Linton writes:

'All anthropologists who have come to know the members of non-European societies intimately are in substantial agreement on certain points. These are: (1) Personality norms differ in different societies. (2) The members of any society

¹ MARGARET MEAD in *Growing up in New Guinea*, p. 98.

² RALPH LINTON, *The Cultural Background of Personality*, pp. 81, 86.

will always show considerable individual variation in personality. (3) Much of the same range of variation and much the same personality types are also to be found in all societies.¹

These last points strongly support the view that inborn tendencies are not only powerful in their influences but are also, generally speaking, fairly similar in different communities, while varying greatly among individuals in each separate community.

The order of discussion of tendencies or drives. Having now discussed briefly some of the main problems as to inborn tendencies in man, we will proceed to consider more fully the most important of these and their modification by experience and training. The question arises, 'In what order shall they be dealt with? Shall we try to arrange them in order of biological importance for the human race?' This would presumably put first hunger and the food-seeking impulse; but of what use would be the survival of the individual if the species is not continued? So the sex impulse appears equally important. We might go on to show that other tendencies are also essential, e.g., the maternal protective instinct, if the young are to survive.

Abandoning the order of biological importance, we might take first those tendencies which are most important in the process of education. Some, for example, would say that self-assertion in the sense of the will to individual success is the fundamental motive for educational progress. On the other hand, it might be argued that in moral education and the training of character, altruistic tendencies dependent on the protective or helping impulse, are the supremely important factors. And so we might continue, and all such arguments err to some extent because the various tendencies are so closely interconnected: so we are up against our old difficulty about studying one topic before we have studied all.

The reader, then, should not attach any importance to the order in which I take these various tendencies. It is largely dictated by the desire to have certain essential ones touched on

¹ *Op. cit.*, p. 82.

before coming to those which have to be discussed more fully from the practical educational point of view.

Note. After the first proofs of this chapter were corrected, there was published an important pronouncement by one of the leading American psychologists, H. S. Langfeld, Professor of Psychology in Princeton University. He states that recently there has been a great change among American psychologists as regards the attitude to McDougall's views on instincts. Now the trend is to recognize more decidedly the great influence of innate tendencies, and of individual differences in these, rather than to regard environmental influences as supreme. See 'Psychology in America Today' in *Proceedings and Papers of the Twelfth International Congress of Psychology at Edinburgh, 1948* (Oliver and Boyd, 1950), p. 9.

CHAPTER VI

SYMPATHY. THE PARENTAL IMPULSE. FEAR AND DISGUST

First we will consider a tendency – Passive Sympathy – which is of so general a type that even McDougall and others who enumerate many human instincts, do not include it in the list.

Passive sympathy or sympathetic induction of emotions. The word ‘Sympathy’ by derivation really means ‘feeling with’. In ordinary language it usually implies not only feeling distress *with* someone but doing something for them – if help is needed. It is important, however, to distinguish the impulse to help and mere sympathetic feeling. If we see or hear a person laughing with glee most of us tend to laugh and to feel at least some degree of delight, even if we do not know the cause of his laughter. If we see grief realistically portrayed on the stage we tend to feel a similar emotion. A mere baby, on hearing another cry, will often show similar signs of distress. My boy at five years, when I described a soldier so wounded in the knee that it was mere pulp, shuddered and said, ‘Oh, that gives me a pain in my knee.’ One of my daughters, at three and a half years, screamed with apparent acute distress when our little dog was biting a thrush. When, during a violent air-raid, I was in a cellar with half a dozen others, a sudden loud expression of fear by one person caused an obvious intensification of fear in most of the others.

In all these we see examples of passive sympathy, the general tendency for the expression of emotion or strong feeling by one person to cause a similar emotion in others. Such passive sympathy need not necessarily be accompanied by an impulse to help. It certainly appears in infants before the impulse to help appears, and as McDougall points out:

‘There are persons who are exquisitely sympathetic in this sense of feeling with another, experiencing distress at the

sight of pain and grief, pleasure at the sight of joy, who yet are utterly selfish and are not moved in the least degree to relieve the distress they observe in others or to promote the pleasure that is reflected in themselves. Their sympathetic sensibility merely leads them to avoid all contact with distressful persons, books, or scenes, and to seek the company of the careless and the gay. And a too great sensibility of this kind is even adverse to the higher kind of conduct that seeks to relieve pain and to promote happiness; for the sufferer's expressions of pain may induce so lively a distress in the on-looker as to incapacitate him for giving help. Thus, in any case of personal accident, or where surgical procedure is necessary, many a woman is rendered quite useless by her sympathetic distress.¹

The impulse to help when distress is sympathetically felt seems, then, to be relatively distinct from the tendency to feel sympathetic distress, yet the sympathetic distress is surely an important part of the whole stimulus to active help. We shall consider this active helping later under the heading 'Parental or Protective Impulse'.

Specific elements in passive sympathy. Passive sympathy is usually described as a general tendency because it tends to occur in so many different situations – at the sight of the expression of any and every emotion. However, there seem to be two main types of passive sympathy – (a) sympathy with distress, fear or pain, and (b) sympathy with pleasure and joy – and these two types vary in comparative strength in different individuals. There are some people who will laugh with us when we are merry, but do not weep with us when we are sad.

But we can go farther in our analysis: for sympathy with distress may depend on the *kind* of distress. One man may feel much sympathetic distress with another man who has lost his wife but not much if he has lost a small fortune: another man may sympathize more with the loser of the fortune. I find, by inquiry, that many people feel much more sympathetic distress with certain kinds of pain than they do with other kinds.

¹ W. McDougall, *Social Psychology*, 9th edit., p. 95; 23rd edit., p. 82.

These differences are no doubt partly innate and partly due to experience. One of the innate differences seems to be in the capacity to imagine something of the distress of others, even when they are undergoing an experience we have never had. At the time of writing, my wife and I are constantly turning on the news bulletins because we are both intensely distressed at the thought of our brave airborne troops surrounded and harassed near Arnhem; and at the anxiety of the men of the 2nd Army trying to relieve them. Yet, neither of us has ever been in a similar situation. Some people, however, seem incapable of imagining distress in circumstances they have never themselves experienced. We shall see later that one method of moral and citizen training is to provide, for such persons, the actual sight of the distress or want which we wish them to strive to help.

Before we touch on any practical applications, however, we must bear in mind the fact of individual differences in the strength of this as of all innate tendencies. In some persons the tendency to feel an emotion seen expressed will be very strong, and in some it seems very weak. Further, if, as I have suggested above, there are specific elements involved, then one person may have a strong tendency to sympathize with pain and a weak tendency to sympathize with joy; while with another man the opposite may be the case.

The sympathetic induction of emotions in moral and aesthetic education. This fundamental tendency of passive sympathy is of considerable importance in the moral and aesthetic training of the child. Let us start with another simple illustration of passive sympathy. If an elder brother shows disgust for a certain kind of food the younger child is apt to feel something of that disgust and to object to eating it. This is all the more likely to occur if a slight innate tendency is roused; as for example, disgust at lumps in a soft food like porridge. Now similarly, if a mother shows indignation when she sees a big boy bullying a little one, her own little girl who is standing by her side will be more likely to feel similar indignation. Again if a teacher feels genuine emotion in reading a poem it is likely that something of that feeling will be experienced by many of the children,

especially if the teacher is greatly liked. Here again the matter is a somewhat complex one because the child may be primarily occupied in trying to understand the poem, and any unpleasantness felt through difficulty may inhibit the tendency to feel the emotion; so will any antagonism usually felt towards the teacher. Nevertheless, the genuine feeling on the part of the teacher for beauty, whether in literature, or art, or music, is one extremely important factor in aesthetic education. First-class acting of the expressions of the emotion may have a similar effect, but it is unlikely to be maintained long. We all know how an expert actor can produce in his audience feelings similar to those represented, but how deplorably the second-rate actor may fail.

The question of the *permanence* of the effects of such experiencing of induced emotion in, say, the hearing of a poem read by a teacher is another question. If a particular emotion has been induced in the reading of a certain poem that emotion is quite likely to recur later when that poem is read; it has become associated with it. I find, even now, that certain poems read magnificently by a certain teacher when I was a boy at school, still appeal to me to an extent which I cannot now find justified by an intrinsic literary value. The halo of that early glow seems to remain.

We cannot be sure, however, that such an induced emotion will spread to the realm of poetry generally, though it should affect the child's attitude in approaching poetry. He knows that a volume of poetry may include at least some poems which he can enjoy. Here again, however, the matter is complicated by the innate capacities of the child to appreciate the feelings and ideas expressed in the poem. This complication will be more understandable to the reader at a later stage in this book.

Passive sympathy in crowds and groups. The sympathetic induction of emotions in one person from another explains why an emotion seems to spread so readily in a crowd; whether it be fear or anger or delight. A good play 'goes' all the better if there is a good audience, and actors tell me they greatly value the presence in the theatre even of a few individuals who they know will appreciate the play, and whose influence will spread.

This spread of feeling in a group is sometimes also mentioned as a reason for teaching the appreciation of English literature or music or art in groups, so that the emotion of one will spread to another. This is sound, but only so far as some *expressions* of the emotion in certain specially receptive pupils are sufficiently evident to the others to have suggestive force.

Active sympathy – the parental or protective impulse. We have seen that passive sympathy – the experiencing of an emotion in response to the signs of that emotion in another person – is not necessarily accompanied by an impulse to help that other person. Partly for that reason, though it is an innate tendency, it has not been classed as an instinctive tendency even by McDougall, but as a general tendency. What would popularly be called active sympathy involves something additional – the impulse to help or protect.

In the higher animals the tendency to help and protect another appears most strongly in the mother's behaviour to her own young. In humans it also seems strongest in the mother; for her child she will usually sacrifice her own comfort and often even life itself. But the impulse is normally strong also in fathers towards their young. Even a man who is rough and selfish towards his fellow men may be tender and protective to his children. The famous murderer, Charles Peace, was an affectionate father! The evidence of help and protection given by young children of four or five years to younger ones suggests that if this impulse primarily originated, as McDougall says, in a maternal impulse it begins to mature very early, and in childhood may be already directed to others even older than the child himself. It thus affords a good example of that 'spreading' of an innate tendency which I mentioned earlier, which is so characteristic of instinctive tendencies in man. It accompanies affection for another and in adolescents and adults usually appears particularly in conjunction with the love of a member of the opposite sex, the male especially feeling protective to the female, the latter revealing at times the impulse to 'mother' her lover.

Accompanying this impulse to protect and help, there seems to be a specific emotion which has been well called the tender

emotion: felt perhaps most strongly by the parent or lover, but appearing as an element in other affectionate relationships. This tender emotion felt by A towards B then usually awakens to some extent a similar feeling in B through the sympathetic induction of emotions.

A marked weakness in this helping or protective tendency is frequently noted in juvenile delinquents. They often seem quite unconcerned about the pains and troubles of others.¹ At the other extreme we sometimes find a mother who lavishes herself and all she has on her child (even when he grows to manhood), and in a way unchecked by wise judgement; so that he becomes quite spoilt. This source of bad discipline we shall discuss in a later chapter. It should be emphasized that the maternal instinct, though so powerful, is in itself only a guide to the mother's actions in the earliest years or even months of the child's life. It is no guarantee that after the suckling period is over the mother will feed the child wisely, still less that she will guide aright its social and moral development. An extreme example of this is afforded by a woman who was bringing up her three children so badly that a Juvenile Court decided they should be handed over to the care of the Birmingham Education Committee. Yet this woman's maternal love was so great that she declared she had now nothing to live for, and asked that she should be given something to kill her, and shortly afterwards died, according to the pathologist, of a broken heart (*Daily Telegraph*, 14 February 1945).

The impulse to give to every beggar at the door, which encourages lazy vagabondism (though we cannot perhaps help liking a person for that impulse) is another example of the way in which an instinctive tendency, even of a specially admirable kind, needs guiding by intelligence if it is to serve the best purposes of mankind.

This innate protective or helping impulse seems to be the very core of genuinely altruistic action. If so, the question arises – How can we train a child or encourage an adult in unselfishness if the essential basis for it is innate? This is a fundamental problem of moral education: and as we have found several

¹ C. BURT, *The Young Delinquent*, p. 481.

times already, we meet here a question we cannot fully answer until later topics have been discussed. We need especially, a fuller knowledge of suggestion and imitation. Here we only summarize the means by which altruistic actions can be encouraged and so the beginnings of moral training be made, even if the motives are not the highest and do not always spring from this innate protective or helping impulse.

(1) First we may encourage any considerate helping or sympathetic actions the child may show by our warm appreciation and commendation, so that he experiences more completely the joy of being helpful. At the lowest level we can check selfish, unkind actions which the child's own sympathy (passive plus active) does not check, by reproof, by showing that it lessens the affection of others, and if necessary by penalties.

(2) By suggestion and example we can sometimes lead the child to imitate our own unselfish actions and attitudes.

(3) At a later stage we can ensure that the youth shall meet situations in which an appeal is made to his active sympathy: and that at least he knows about the need of others for his co-operation and help. This leads us to consider how much appeal is usually made to sympathy and active help.

The appeal for sympathy and help. A word must be said on this rather neglected tendency. The baby's cry in distress is the earliest example of appeal, and crying, as an expression of distress, continues to serve as an appeal for sympathy and help in childhood, and even in women. (I refer to crying of an instinctive type, not deliberate crying, which some women can manage, as we see on the stage.) The child's cry makes an almost irresistible appeal to the protective impulse, unless it strikes one as 'put on' or out of proportion to the source of trouble, in which case it may appear slightly comical. Similarly, the tears of a woman make a powerful appeal to, I imagine, most men. But tears and crying are not the only stimulus of sympathetically induced distress or the only means of appeal for the parental or protective impulse. The tones of the voice and the expression of the face may serve the same purpose.

All this may seem too obvious to need mentioning: it is

important, however, when we recall the great individual differences that we may expect here as with all other innate propensities. I well remember a dear old lady whose voice took on (quite naturally I believe) such a tone of intense distress for apparently trivial reasons that it was impossible for her family and friends to refrain from comforting her and yielding to her every whim. Yet her quick change from what seemed real misery to cheerful chatter on trivialities suggested that the unhappiness was very shallow. Jane Austen has graphically portrayed several women of this type in her novels.

In accordance with the normally greater strength and independence of the male and the usual relative weakness and need of protection in the female, we should expect the expressions of distress, and the tendency to appeal, to be stronger in the female; and so it is usually. But within each sex there are great individual differences; and some who naturally show little of their inner distress and whose tendency is to hide it or to 'carry it off' with bravado may miss much of the sympathy granted to those who 'instinctively' make a stronger appeal.

Of course, if a second person B perceives that something is likely to be causing A pain, then A may actually gain more sympathy from B because of this self-restraint or endurance. But such understanding (of the particular source of distress) may be found only in very few or in none of A's circle; and in such cases mere quietness may be interpreted by the shallow as **gloominess or ill-nature**.

Our supposed intuition may go wrong in judging the expressions of feeling, often with those whom we have known for years; and this is true even of women's intuition—which, by the way, experiment has shown to be as unreliable as that of men even in judging the temperament and character of young children.¹

These individual differences in the strength of the tendency to appeal for sympathy should be carefully borne in mind by

¹ See C. W. VALENTINE, 'The Relative reliability of men and women in intuitive judgements of character', *B.J.P.*, 1926, 29. These experiments are discussed later in some detail in Chapter XXV.

teachers, youth leaders, and social workers in all their relations with those they are trying to influence and help.

Fear and the avoidance of danger. The tendency to feel fear seems to mature very early. In the first few months a baby will scream at loud and strange noises or if he feels himself falling. At a year or two he often shows fear of strange animals, even if they have caused him no hurt; and he will scream with apparent terror if his father puts on a hideous mask — a response which apes have also shown and which is quite inexplicable by mere experience.¹

Two things about fear in early childhood are of special interest. First, some fear tendencies seem very responsive to suggestion. The fear of the dark, for example, seems to appear spontaneously in some children — maturing only after a year or more unless the baby has been spoilt by its mother and has always been accustomed to a light after going to bed; but even children who do not spontaneously show such fear of the dark are apt to be made afraid of it by the suggestion of others. In fact, the ease with which suggestion works here shows that an innate tendency is lurking in the background ready to spring into action.

A second significant fact about the fear tendency is that children may love to play at being afraid. Often have I played at 'lions' with my youngsters — about three to five years of age — and have chased them up the stairs until they screamed with apparent terror and have begged me to stop: then a few minutes afterwards when the tears were dried, they would beg me to play 'lions' again.²

This simple illustration suggests that there may be a general tendency for each inborn impulse and emotion to crave for stimulation if it does not find it in its environment. Later on many children and youths do seem actually to enjoy some element of danger: witness the dangerous game of 'last across the road' — in front of an approaching car, and the risks taken in climbing trees; and in some adults, the love of mountain

¹ See C. W. VALENTINE, *The Psychology of Early Childhood*, 3rd edit., Chapter XI, p. 222, and W. KENNEDY, *The Mind of the Ape*.

² See the chapter on Fear in my *Psychology of Early Childhood*.

climbing with a spice of danger in it. It certainly seems that some forms of juvenile delinquency are partly prompted by the craving for adventure; and perhaps the provision of a legitimate outlet for such cravings may help to prevent such delinquencies. Here we come upon the problem of the deflection or 'sublimation' of instinctive tendencies which we can better understand after considering repression and the unconscious, in a later chapter.

In the meantime, however, a warning must be uttered against the idea that 'thrillers' are good for children for the above reason. Even if it may be mentally healthy for some rein to be given to the child's spontaneous craving for slight physical danger and excitement, it does not follow that it is healthy to provide an artificial stimulus through 'thrillers' and ghost stories. We do know that abnormal and troublesome fears (phobias) can be set up as the result of fear shocks and even by suggestion in early childhood or adolescence - witness the example given near the end of Chapter I.

I do not think we can dogmatize on the question of thrillers. In my judgement the temperament of the child should be one deciding factor. From the timid, nervous child, I should try to keep stories of a gruesome or terrifying kind, while trying gradually to encourage him to take slight bodily risks.

There is such a temptation to harassed mothers to make use of fear in the management of their little children - fear of a thrashing from father, of a 'bogeyman', and so on, that many children of school age are more frequently too 'nervous' rather than too venturesome. The same child, having only an average strength of the fear tendency, may be too careless of the modern artificial danger of street traffic which he can see and thinks he can cope with; and yet at the same time he may be excessively nervous about the dark or a ghost, because of suggestive stories told him.

The teacher can do something to help nervousness and specific phobias in children by kindly treatment and by reasoned argument, and by the explanation of how fears arise. But excessive and continued nervousness marks a child out as a case for the school psychologist or the Child Guidance Clinic.

Disgust and repulsion. This tendency shows itself first in the baby's rejection from its mouth of milk when it has had enough, or of lumps in the food or objectionable tasting food. As the infant matures, disgust shows itself at obnoxious smells and sights and touch sensations, for example, the revulsion from the idea of touching a slimy creature such as a slug; and in the adult it may have expanded to a wide range of stimuli, partly through association and partly through suggestion.

This tendency to repulsion may not seem very important from an educational point of view, and yet it has a very close connexion with some aspects of good manners. Decent manners are, to some extent, a consideration for a sensitive tendency of disgust in other people. For example, most people are disgusted at spitting in a room or vehicle, at certain kinds of dirtiness of face and hands, at some coarse eating habits, at noses that need attention, and so on. Now even if these revulsions are dependent partly upon training and suggestion, it is much easier for the offender to avoid these things than it is for the sufferer to get rid of his disgust. This is the justification for training in these matters. Few children are without some elements of this tendency to disgust, and it should be explained that objectionable things such as those mentioned above make many people feel positively sick.

Individual differences in disgust are not, I think, entirely due to differences in training. In accordance with the principle we have already recognized, we may expect innate individual differences, and my own observations strongly confirm this. For example, among my five children, the two girls and one of the boys needed practically no training after the first two or three years, in cleanliness and daintiness: one was, if anything, excessively particular. But though the same encouragement, suggestion, and training was applied to the other two boys, they both needed it constantly, and one, almost until adolescence, thought that a high collar was an advantage because it saved the trouble of washing the neck!

In adult life the importance of consideration for this tendency in others is sufficiently obvious. Its influence appears most markedly perhaps in the relations between the sexes.

Here the sensitivity of one may completely spoil a budding romance. One intimate friend, for example, told me that when he found himself falling in love with a young woman who was beautiful and attractive and whose tastes and interests fitted his remarkably, he was completely 'put off' when he found that she often had dandruff on her coat collar, and occasionally food visibly lodged between the teeth after a meal.

Of course, mothers and nurses frequently demonstrate that they can act in spite of feelings of disgust, and no doubt in time these feelings of disgust can be modified and even perhaps quite inhibited. But this does not affect my statement above that in ordinary daily life it is easier for the careless to avoid repulsion in others than it is for the more sensitive to inhibit their strong innate tendency.

CHAPTER VII

ANGER, PUGNACITY, AND AGGRESSION; SELF-ASSERTION AND SELF-SUBMISSION

The social and educational significance of pugnacity, aggressiveness, and anger may be expressed in the following questions: Is man essentially a fighter? Must there always be wars? Is he so aggressive that harmonious co-operation cannot be expected? Must boys always be bullies and oppress the meek? Can we enlist aggressiveness in the service of higher aims than that of merely 'downing' others?

In man the primitive reaction of anger seems to occur most decidedly when another uses physical violence: the biological function of anger seems to be to supply further energy in resistance and attack, driving out the more inhibiting influence of fear. I well remember my own reactions to one big bully in school. I was a peaceable youth not much over fourteen, and my upbringing had made me think fighting wrong. This, and even more, fear, made me, with other boys, for a long time submit to the bullying, sometimes rather cruel, of a youth much bigger than ourselves. But one day he went beyond bounds and anger suddenly changed my behaviour into one of fierce resistance: and by the unorthodox method of grasping him round the waist, my head against his stomach, and 'barging' him to and fro against the hard desks, I was able to cause him considerable discomfort before he could take his revenge.

That incident illustrates the strongest primitive stimulus of anger - the physical violence of another. But anger appears in early childhood without any such physical violence: it may be roused by any form of opposition to a child's activity in which he is eagerly engaged. Frustration of any keen desire may rouse anger, sometimes when no other person is involved; even in

adults this may appear, as when a man curses violently when he keeps breaking some tool he urgently needs to use. The opposition of other persons to the child's desires and actions, however, seems the most frequent stimulus to anger in children and to resultant pugnacity.¹

Pugnacity itself – the tendency to fight – does not seem to depend entirely upon the rousing of anger. The innate tendency reveals itself in playful fighting in children, as it does especially in young dogs and in kittens. And young children may at times use physical violence seriously without signs of anger.²

The playful fighting of children – especially boys – we may regard as due to the tendency towards the early practising of what will be biologically useful in adulthood, the play contriving to adapt itself to activities more essential in very primitive stages of human life. (See the further discussion of 'Play', especially p. 175.)

So far as something further appears which we may call aggressiveness, as in bullying, there seems to be involved another kind of instinctive tendency which must not be confused with primitive pugnacity, namely, self-assertion, which we shall discuss next. But first we must comment upon the question of war.

Pugnacity and war. The main facts about pugnacity in man do not justify the conclusion that as man is a pugnacious animal we must always have wars. In the development of civilized countries we have seen personal combat almost disappear as a means of settling disputes. Attempts to dominate, made by a foreign nation, may no doubt raise some pugnacity in the other people who refuse to be dominated: but this presupposes the starting of, or the threat of, physical violence from the other, and that does not seem to depend merely on innate pugnacity but on greed or the desire for personal aggrandisement of the leaders, or on fear of aggression (for similar reasons) by others.

In any case, it is absurd to say that wars are an essential outlet for man's pugnacity when many countries have had long

¹ See F. L. GOODENOUGH, *Anger in Young Children*, especially Chapter V.

² C. W. VALENTINE, *The Psychology of Early Childhood*, Chapter XIV.

periods of peace. What is happening to the instinctive tendency during those periods? In fact, this pessimistic view ignores two things: first, that pugnacity and anger are in the main largely secondary tendencies, dependent on the frustration of other tendencies; and second, that in so far as there may be a spontaneous aggressive impulse – more properly called self-assertiveness – this may reveal itself and satisfy itself in many other ways than that of physical violence, as we shall see later in this chapter and in the chapter dealing with sublimation.

Assertiveness and self-assertion. In adults this tendency shows itself in the wish to dominate and impress others, to get one's own way for the sake of getting it (and not merely for the sake of the thing obtained), to win in an argument, to prove oneself superior, and so on. It is clearly distinguishable from any tendency to physical fighting or anger: indeed, it may be shown by the strongest pacifist; and it is accompanied, when felt to be successful, by pride or elation and not by anger.

Assertiveness, without explicit thought of the self, appears in infancy at a very early age; some would say at least by one year, when the child may persist, against discouragement by his mother, in some new and interesting activity. It is difficult to imagine that the child at this age can have any *idea* of asserting himself, though before the end of the first year there are certainly many observations that suggest anger and persistence when the child's obvious wishes are opposed. The definite assertion of the self as such seems, however, certainly to appear in some children by about the age of two. I noted in my children at about this age how frequently they would resist having anything done *for* them, repeatedly demanding they should do it for themselves; and then they would boast of having done it *themselves*.

A note on my little girl 'X' shows how, at times, the resistance to self-assertion may produce anger.

'X at 3 ; 6 is very self-willed just now. Longs to assert herself. Dances and stamps with rage if her will is crossed. One day I locked her in my dressing-room till she should stop. She was silent a moment, so I unlocked the door and said

she could come out. She would not, however, but held the door and said "I don't want to come out" — a final resort to save self-respect when resistance was futile. This characteristic I also noted several times later in X. Thus, when told she must not have a sweet, as a punishment, and later this was remitted, X refused, saying she did not want one.'

(As to age figures, 3 ; 6, see note p. 11.)

Similarly my boy 'B' would preserve his self-respect thus: 'When told not to do something he sometimes obeys and pretends he does not want to do it.'¹ In two large classes of my students, numbering about 200, nearly all the women and a great majority of the men actually remembered adopting similar attitudes themselves.

Between the ages of two and five, children will sometimes play at this assertiveness; thus, my little girl 'Y' at 2 ; 7, after contradicting something her mother said, begged her mother to continue saying it so that she (Y) could go on saying 'No'.

A period in which there is a marked self-assertion and opposition to control seems to be the normal thing for children somewhere between the ages of two and five. It may be actually a good sign of future development. In one inquiry it was found that of 100 children who passed through this period of revolt, eighty-four developed normally later as to 'strength of will'; while of 100 who passed through no such stage of revolt, only twenty-six developed normally, the others showing rather feebleness of will.²

Even at later stages it must not be thought that self-assertion is inherently an undesirable trait. As an element in self-respect and as a backer-up of altruistic impulses, it can take an effective part in valuable social activities, as we shall see in Chapter XIII. This fundamental impulse of self-assertion (or at least assertiveness) seems also to show itself sometimes in the persistence with satisfaction and pride in overcoming merely material or objective difficulties (when no other person is in-

¹ See *The Psychology of Early Childhood* (3rd edit., 1945), p. 281.

² *Zeit für pädagogische Psychologie*, 1929, p. 83. Quoted by J. ABRAMSON in *L'Enfant et L'Adolescent Instables* (Paris, 1940), p. 255.

volved), as when a child refuses to be beaten in solving a puzzle; and hence it may be a most useful trait if it can be brought into a child's attitude to his work.

Self-display. This is usually regarded as a form of self-assertion, but there seems to be one clear distinction between them. In self-display there need not be actual opposition to another or attempt to show superiority, at least to the person to whom the display is shown.

In human courtship one may see display for the attention of the loved one; and in the behaviour of infants one may see it directed towards one whose interest is sought. Nevertheless, the showing off, boasting, and vanity so common in young children usually seem to be a form of assertion of self over others, and an undesirable one.

Individual differences in self-assertion. The strength of this tendency, as of others, varies greatly among different individuals. Where the impulse is strong, then failure and defeat may bring great dissatisfaction and even misery and depression; or it may, if conditions are not too hopeless, lead to refusal to admit defeat. We recall the schoolmaster in Goldsmith's *Deserted Village*: 'even though vanquished he could argue still'. It appears as a strong element in most who make good leaders, and in that doggedness which is thought to be a characteristic of the British people.

If the impulse is exceptionally strong, and unchecked by reason or experience, or if not balanced by strong sympathy and the protective impulse, it frequently leads to an aggressive and 'bossy' attitude to inferiors. The typical bully seems to enjoy the mere exercise of power. One can see this, not only in that assertiveness which so easily passes into actual pugnacity in the physical bully, but in people of a much more intellectual type who find enjoyment in the mere victory of words, and in 'scoring' off others. This is another example of the frequent irrationality of instinctive tendencies, for it only makes a man disliked.

Sometimes the impulse seems to be extremely weak in a person. The child may be content to take a back place and may even, as I have myself observed, dislike to appear too successful

among his fellows. I have heard an exceptionally modest boy say that he would hate to be top of the form in a subject.

I have said above that failure to satisfy this important impulse of self-assertion may lead to unhappiness. We shall see later, in Chapter XI, that it may also set up an inferiority complex. Here I only wish to stress the importance for the child's own satisfactory personality development that he should obtain some legitimate satisfaction of the impulse. Failure in school achievement has been found to correlate appreciably with problem tendencies in children.¹ Of course to some extent the neglect of school work and the problem tendencies may both have been the result of the same defects in the child, or of adverse environmental influences in home or school. There is general agreement, however, that the child who finds the work of school beyond him is more likely to get into mischief, or failing that to become hopelessly discouraged. In the early days when handwork was first introduced into the schools competent observers noted an improvement in the general attitude towards school in many pupils, sometimes with a decided drop in the need for corporal punishment. The handwork gave a chance to the less intellectual children to experience the satisfaction of success. The highly academic curriculum needed for matriculation, and until recently imposed upon all pupils in Grammar Schools, led to disheartenment in many. One wise headmaster once said to me that it was a pathetic sight to see so many of his pupils, at first keen and happy, gradually acquiring an 'inferiority complex' in a hopeless struggle with work too difficult for them.² In an inquiry made by one of my research students among Secondary pupils as to why they liked or disliked various subjects, the evidence for this kind of effect was plentiful. Some boys wrote about Latin: 'I cannot understand it however hard I try.' 'All my efforts seem in vain.' 'I often spend an hour instead of half an hour on my Latin homework, and get more punishment for it than for any

¹ W. C. OLSEN reports a correlation of 0·57. See his *Problem Tendencies in Children* (1930), p. 53.

² We shall see from our discussion in Chapter XI that the headmaster used the term in a popular sense. Also there was no doubt more involved than the frustration of self-assertion, but the latter was there, nevertheless.

other work.' Many girls reported similar experiences with Mathematics.¹

Adler attached so much importance to this impulse of self-assertion that he connected it with practically all problems of discipline in childhood. No doubt he exaggerated it when he wrote as though laziness was almost invariably a cloak for stupidity of which the child was aware, but which he was too sensitive to reveal. Still it is probably more painful for most children (or adults) to be thought incompetent rather than lazy, and certainly there is no justification for ever *telling* a child he is stupid. Some teachers often do so, I am afraid, in moments of exasperation. They may find it helpful in checking the tendency if they reflect that it is probably due to their own strong impulse of assertiveness, when the desire to make a pupil understand is baulked, finding an irrational and futile outlet, the teacher emphasizing his own superiority and trying to make the pupil more submissive by the realization of his (the pupil's) own stupidity.

Self-assertion in the teacher. The question of the teacher's self-assertion over the class is an important one. Undoubtedly it is desirable that the teacher should be able to impress his pupils in some way by his personality, so that they readily submit to his suggestion, guidance, and discipline. And it is a mistake to suppose that children respect the weak teacher who cannot secure order or 'manage' a class and get on with the work. This is partly because most children have the sense to see that they ought not to waste time, though they may try to do so. 'Boys', writes a distinguished headmaster, 'are strange creatures who play the fool and yet strongly resent the fact that they are allowed to do it.'² Willing response to the firmness of a respected teacher is partly due to the impulse of self-submission, an actual desire for being led and controlled, which enjoys some opportunity of satisfaction: to this we shall turn in the next section. Here I want to emphasize that this legitimate

¹ See R. A. PRITCHARD's article in *B.J.E.P.*, 1935, 5. I have given a brief account of this inquiry later in Chapter XVI, p. 203 and Chapter XXXIV p. 577.

² DR CYRIL NORWOOD, in his book, *The English Tradition of Education*.

assertion of the teacher's personality over his pupils is different from that excessive 'bossiness' which sometimes seems to be due to the mere enjoyment of power over others.

I have seen it seriously suggested that the desire for such enjoyment of power is the main motive which leads people to become teachers. This seems to me nonsense – and is shown to be so by the enormous and immediate increase in the number of persons seeking admission to Training Colleges when the salaries of teachers were substantially increased by the Burnham Committee not long after the First World War. Nevertheless, the position of teacher and pupil does offer constant opportunity for assertiveness, and that may well be a partly unconscious motive having some influence on the choice of the teaching profession by a good many. Certainly when I have watched children 'playing at school', I have noted that the child's idea of a teacher was clearly that of a bossy type – always scolding and ordering the others about.

What degree of submissiveness a teacher should try to secure from pupils will, I hope, appear more clearly in our next section, when we distinguish between absolute self-abasement through fear and the self-submission due to admiration and even affection.

Self-submission or self-abasement. The most striking combined example of self-assertion and of grovelling submission I ever witnessed was shown by a pack of Esquimaux dogs. Their keeper took me to see them at their midday meal. Each dog had a large chunk of meat, and about half-way through the meal one huge dog, the recognized leader of the pack, rose, left his meal, walked to the next dog, and stood quietly by him. The latter immediately left his food and rolled on his back with paws bent and limp in an attitude suggesting complete submission. The leader then passed on to number three, who also, at once and without a single protest, made a similar obeisance; and so with the rest of the half-dozen. The routine finished, the leader returned to his own place and all resumed their meal. The leader had reasserted his dominance and had it recognized.

The well-known dominance of some leaders among pack

animals is usually, I believe, the result of a struggle: sometimes a fight for the right to pick his mates. In such cases self-abasement is no doubt partly due to fear, as it may be in a gang of boys or in a tribe of primitive people. Such submission, however, is only likely to last until some younger member of the pack or gang feels strong enough to challenge the leadership. But there does seem to exist another kind of submissiveness, in which no fear, but rather admiration, is aroused and submission seems to be actually enjoyed. I have noticed in my own children, at about two or three years of age, that they would sometimes ask to be given orders – to play at just ‘doing as they were told’. It did not need affection to call it out; for it would appear when playing with an older child who was until then a complete stranger. As a characteristic trait of a particular child, instead of assertiveness, it has been noted in very young children to be fairly constant.¹

Among adolescents, submission often shows strongly in the devoted following of a leader who has captured their admiration – a tendency Hitler did not fail to make use of. When the tendency is very strong and unbalanced by other tendencies or ideals which would check it it may be the main factor in a youth’s being led by suggestion into criminal pursuits if he gets among bad companions. “‘I always seem to do what they tell me,’” said one limp and languid little thief.² The tendency seems to make the youth especially open to suggestion by another and gives the leader of dominant personality his chance, whether for good or evil.

Here is a matter of fundamental importance for the question of leadership; but the leader must have those traits which are admired by the particular group he wishes to lead. Scholarship will make little appeal to a gang of young toughs: W. R. George, who made such a conquest among the wildest gangs of toughs in New York, first became their leader because of his powers as a boxer.³

¹ L. M. JACK, University of Iowa, *Studies in Child Welfare*, 1934, 9, No. 3.

² CYRIL BURR, *The Young Delinquent*, p. 476.

³ See *Citizens Made and Remade*, by W. R. GEORGE and L. BEECHER STOWE (Constable, 1913). I shall tell the story more fully in Chapter X, p. 130.

Good leadership, however, depends on much more than the appeal to submissiveness, and we must not pursue the topic here; but a word may be said about the relation of self-submission to affection. Many a young woman seems to find a positive delight in submitting to the orders of a man she loves, though experience alas may modify this submissive attitude. Similarly in the relations between children and young people and their teachers and leaders, an affection for the leader will facilitate the submissive attitude, and increase responsiveness to his suggestion. Self-submission is indeed so closely linked with suggestibility and suggestion that we will consider that topic next.

A note on 'Ego-involvement'. This term has been used by some psychologists in a sense covering: (a) the situations I have described in this chapter as involving self-assertion; also (b) volitional attention (as distinguished from spontaneous attention), which I deal with in Chapter XVII; and (c) the conscious adoption of ideals, including that of an ideal self, discussed in Chapter XIII.¹ I cannot see any advantage in the adoption of the term 'ego-involvement'. It is apt to conceal very different degrees of self-consciousness, which can be better indicated by varied wording according to the situation.

I agree with Sherif and Cantril in their view that consciousness of self comes to maturity only in a social setting. I disagree with their apparent refusal (pp. 101-2 of their book) to admit the innate element as a basis for self-assertion. They do, however, admit that 'owing to differences in characteristics such as temperament, ability, or energy, there are enormous and important differences in the manner, persistence, and intensity in which ego-striving proceeds', (p. 115) and they admit that such differences may be 'largely heredity' (p. 106), which is enough, I think, for my purposes, especially as they even go so far as to say that psychological phenomena, including ego-involvements 'are due to complex or physical reactions within the organism' (p. 107).

¹ See M. SHERIF and H. CANTRIL, *The Psychology of Ego-Involvements* (New York, ; also for a brief exposition, E. A. PEEL, *The Psychological Basis of Education*, pp. 74 ff.).

One further point of difference may be added. Sherif and Cantril do not seem to allow for the ego-involvement when no other person is concerned, as happens, I have suggested above, when a man quite alone persists in trying to solve a difficult mathematical problem or a puzzle with the feeling, and even the spoken words, that 'I'll not let this beat me'.

CHAPTER VIII

SUGGESTION, IMITATION, AND GREGARIOUSNESS

When a youth under the influence of an admired leader adopts some belief because of the leader's dominance over him and not because of logical demonstration of its truth we see suggestion at work; and similarly, if the youth adopts some ideal suggested by the leader, say of truth or justice. Clearly this process of suggestion may be of great importance in the training of character, and even as regards the attitude to school studies; for example, the suggestion that a poem is beautiful, or a chemical experiment wonderful, can lead the pupil to give them a sympathetic trial. Thus the process of suggestion is worth careful study; and with it we can consider the psychology of imitation — a word best confined to the doing of an action seen carried out by another.

At the end of the last chapter we said that the impulse of self-submission made a child more suggestible by the person who dominates him. The study of such self-submission and the whole process of suggestion may be best approached by considering the fascinating subject of hypnotism.

Suggestion under hypnosis. If a person is to be hypnotized the first essential is that he must be willing to be hypnotized, and he must yield himself as completely as possible to the influence of the hypnotizer. This implies that he must begin with considerable confidence in the hypnotizer. Some persons seem to have a greater capacity to hypnotize than others: some are apt to be too domineering in manner. Some persons seem incapable of being hypnotized, though there is always the possibility that they have not been tried by 'the right person' for them.

First the patient is told that he will go to sleep and only hear the voice of the psychologist. This may happen even in a room where loud traffic noises can be heard. (This going to sleep, it

should be noted, is itself an example of suggestion working before true hypnosis.) When the patient is in a deep sleep further suggestion can be applied. Suppose a woman is intensely afraid of going into a busy town and traffic: the suggestion can be made to her that it is quite harmless, that she will not be troubled, that she can go with courage. When she wakes on the order of the psychologist she will for a time have a different attitude to going into a town. I have known, for example, a woman patient to whom I had made such a suggestion when I had hypnotized her, say shortly after waking, brightly and confidently, 'I think I shall go and do some shopping,' though she had no remembrance of the suggestion having been made to her.¹

For experimental purposes suggestions can be made that even purposeless actions shall be carried out. For example, the patient under hypnosis may be told that when he hears the clock in the consultant's room strike three he will get up and poke the fire; then if the psychologist keeps him till the clock strikes the patient will do as he has been told, perhaps apologizing or trying to give some reason for doing so, for the fire may not need poking.

Suggestion in waking life. The suggestion to do an action for which the patient has no motive can usually, however, be made only under hypnosis. When we try to apply suggestion in waking life the situation is different. We may have to meet an unwilling or even an opposed attitude, and success is likely only when there is some pre-existing tendency in the person to whom we are making the suggestion. Experiments show, however, that this pre-existing tendency is not an absolutely essential condition. For example, in an experiment on sixty-five children of about twelve years of age the experimenter told each child to hold out its hand stiffly, and then he suggested to the child as intensely as he could that the child could not close

¹ Unfortunately, such effects of suggestion are apt to be only temporary, but the very fact that the patient has done something which she felt herself unable to do may help to modify her attitude in the future. Proper psychological treatment, however, goes deeper than this and seeks to discover the original cause of the phobia, as we saw in Chapter I (p. 8), and shall see more fully in the chapter on the unconscious processes.

his (own) hand. The suggestion worked with about one-third of the children. It failed with about half, while about a dozen children could close their hands, but seemed to do so only with very great difficulty.¹

To suggest so unlikely a thing as that the child could not close his hand was, of course, a very severe test, and any results in such tests depend entirely upon the prestige and impressiveness of the suggester. Similar results, however, have been obtained even with adults.

Examples of the *suggestion of ideas* can be more easily obtained by the use of suggestive questions. A picture is shown to a group of children, the picture representing a group of children playing in a field. The picture is then taken away and a number of questions asked about it. If the question is asked, 'How many dogs were there in the picture?' even when there were no dogs at all, a substantial proportion of the children will fall to the suggestion and say, 'one or two'. So with the question, 'What was the colour of the farmer's hat?' when he had no hat at all, and so on.

Similar results again have been obtained even when the subjects were adults and knew the experiment was on this very topic of suggestion. The exact form of the question may be important. Thus I asked one class of thirty-two adults who had looked at a picture for ten seconds, the question, 'Was the sun shown in the sky?' and only four said (wrongly), 'Yes.' But when I asked, 'Where was the lamp hanging?' twenty-two students specified a place for a lamp which was not there; and so with other questions which assumed the existence of something not in the picture. In another class when I asked, 'In which hand had Alexander his sword?' every one of twenty-eight

¹ See F. AVELING and H. L. HARGREAVES, *B.J.P.*, 12. In a few cases when I have been demonstrating the process of hypnosis to hospital students and have been rather hurried, and stopped the process too soon, the subject has not gone off to sleep, as was shown by the fact that she could remember all I had said to her. Yet in each of such cases, when I told the subject that she could not lift her arms but that she should try hard to do so, she has failed to lift them, though there were clear signs of great effort. Then when I told her she could now lift the right arm but not the left, she would lift the right and struggle again to lift the left, but without success.

students replied 'Right' (or 'Left'), though he had no sword at all.

Some advertisers are well aware of the possibility of suggesting an attitude towards some product. For example, a certain cigarette is often shown in the advertisement as being smoked by fashionably dressed men and beautiful women: a suggestion that it is the cigarette for the *élite* and discriminating. Agents for charitable appeals and many advertisers of various products know the suggestive value of good paper and good print. In education we cannot afford to ignore the suggestive effect of the dignity and beauty of the school buildings, or of the appearance of the school books; or even of the appearance of the teachers!

The impressive value of a beautiful church is widely recognized and though, no doubt, there may be more genuine religious devotion in many who worship in a plain shed than there is in some who bow themselves in a beautiful cathedral, yet there is little doubt that the majority of people and perhaps especially adolescents, would be more receptive and more suggestible, both as to religious matters and in moral and aesthetic education, if at least gloominess and sordidness could be replaced by dignity and beauty in the surroundings associated with religion and with education.

In moral and religious education the greatest factor is, of course, the influence of an impressive personality which, as we shall see later, does not mean merely an impression of importance, especially of self-importance; furthermore, the manner in which ideas and suggestions are put forward may be equally important. A dogmatic assertive attitude is liable to set up resistance and even contra-suggestibility. We shall touch on this important topic directly, but first I want to point out the connexion of suggestion with that tendency to passive sympathy discussed in Chapter VI.

In accordance with the general tendency for the sympathetic induction of the emotions, a child will tend to feel a similar emotion to that shown by a loved parent or respected elder. Suppose the child sees an elder brother discovered in lying or stealing: if genuine indignation is shown by the parent, some

similar attitude will be suggested to the younger child, and he may tend to feel the same.¹ Even if he is himself the culprit, the indignation of the parent will, at least, suggest to him that it is a serious thing; if reproach is only very casual, he will similarly catch the idea that it is not of much importance. It is in this way that young children tend to pick up and adopt the attitude of those in authority over them towards their conduct.

Now let us return to the process of hypnotism and consider the case of the hypnotized person. He is almost entirely under the influence of the psychologist. What seems to happen is that any contrary impulses are prevented from interfering; critical ideas by which he would judge his actions are largely inhibited. (They are not entirely inhibited, however, for if an action is suggested which directly conflicts with the man's strong moral principles or habits, he wakes up from the hypnotic sleep.)

Hypnotism is, of course, an abnormal and extreme example of suggestion. I have used it merely to illustrate what seems to take place when the waking mind is under the influence of suggestion. Suppose we are listening to a political speaker whom we greatly admire. We know perhaps at the outset that, as we belong to the same party as the speaker, our political beliefs are on the whole the same, so we start with an uncritical, indeed with a favourable attitude. We are then captivated by the speaker's eloquence. Also we have not time to think out his various arguments to their logical issue, and so we come completely under his spell and tend to be convinced of the truth of his assertions, perhaps on quite inadequate grounds. This tendency to believe something without logical proof, as the result of the eloquence or prestige of another person, is another example of suggestibility.

The suggestibility of children. It is generally accepted that children are specially liable to suggestion. As to suggested actions, this is partly due to their impulsiveness: but as to suggested ideas and beliefs, it is partly due to their ignorance. Thus there are rational grounds for the suggestibility of children to which some psychologists do not give adequate attention. Children

¹ I say 'may' because the sympathy with the elder brother may prove even stronger.

usually accept, for example, the statements of their parents, believing even some fairy tales with readiness. One reason is that they have little on which to base any criticism of the ideas. They also tend to find such stories lively and pleasing, so that a friendly and pleasant mood is established in which the tendency to accept and believe is strong, for we are naturally more critical and suspicious when unhappy. But there is another good reason why children should be more suggestible. So many things have been told a child without evidence by his father or mother, which he has later found to be true — all the many little facts of everyday life about which he receives instruction: so that he not unreasonably comes to the conclusion that everything told him by grown-ups will be true. Later, however, he becomes more critical. He finds some stories false. Wider experience checks his readiness to believe, but in the sphere which is not connected with his wider experience, for example, as regards social attitudes and political and religious beliefs, he is still very liable to suggestion.

As regards actions, these can be more readily suggested to a child than to an adult because of the child's impulsiveness, the tendency to act on the spur of the moment, and because of his lack of fixed habits, and partly because as a little child, he feels strongly the superiority of those adults whom he admires and loves. Obviously the greater the prestige of the person who has influenced us and the more we are impressed by the thoughts of his superior wisdom and of our own ignorance and foolishness, the more we shall, not unreasonably, tend to trust in his judgements both as regards beliefs and actions. Thus there are rational bases for what sometimes appears to be suggestion, as well as deeper and more elemental causes. One more elemental cause is the fascination which sometimes seems like a partial hypnotism of our minds by the imposing person, and this tends to inhibit all our ideas that would conflict with his views, as well as producing a submissive attitude.

Affection, desire, and suggestion. This is not, however, even yet a complete statement of the process of suggestion. We seem to adopt especially the ideas and to imitate the actions of those whom we love or even fear. We want to be in accord with them.

There is a strong tendency to act in accordance with their wishes. Now this brings suggestion into close connexion with another well-known psychological fact, namely, that our beliefs are greatly influenced by our desires – the wish, we say, is often father to the thought. Normally we tend to mould our beliefs to the heart's desires. If terrible news is brought to us our first thought is often: 'This cannot be true; it is too terrible.'

Of course not all persons show this influence of desire or belief to the same extent. A man who reflects upon his own tendencies and desires, and on their possible influence on belief, will make allowances for this influence. Indeed there is a danger of the despondent or the hyper-conscientious person going to the other extreme. This type of person is apt to shrink too much from accepting beliefs which fit only too well his desires; which seem 'too good to be true'. Such persons are comparable with those – often of stern puritanical upbringing – who tend to think that, of several possible lines of conduct, the most disagreeable one is sure to be the only right one. (Gladstone, indeed, once said that if you are doubtful as to which of two courses to pursue, the one you do not want to follow is probably right.)

But leaving this type on one side we may say that, as a rule, desire does influence our beliefs, more especially when we are not at the moment clearly conscious of the desire and so cannot allow for it. Now this is often precisely the condition of affairs when we are under the influence of another person. We want to be in accord with him, yet we do not reflect upon this in so many words (especially if we are but children), and so there is a powerful tendency for us to accept his way of thinking and his suggestion of action. From this we can see at once the great importance of the teacher's prestige in the eyes of the pupils if he is to influence their ideals and attitudes, and the importance of his gaining their *affection* and admiration if he is to influence their conduct.

This bearing of affection on influence and suggestion has wider applications: it shows in the relations of parents to children, of leaders to groups, and of friend to friend. Love is

proverbially blind to defects, and we want to be in accord with those we love.

Possibly a teacher, by logical argument, by showing, for example, the consequences of wrongdoing, may influence to some extent the conduct of his pupils even if they do not like him. But young people are even less moulded in character and conduct by reasoned statement than are adults; and there is surely a wide sphere both of moral conduct and of moral and religious ideals and beliefs which cannot be logically demonstrated. In this sphere the teacher must rely chiefly upon influence and suggestion, through example, of course, as well as through precept. In doing this, however, he must beware especially of overpreaching or of over-emphasizing a belief or ideal of his own and trying to force it upon the child: for this is apt to rouse a feeling of opposition.

Self-assertion and contrary suggestion. The enemy of suggestion is the impulse of self-assertion and the tendency for contrary suggestion to occur. We do not in general like to surrender our own will or our own independence of judgement. Especially if an idea or an ideal is presented to us in an unattractive way, if it is monotonously forced upon our attention times without number, if it is urged in a scolding tone, we are more likely to adopt the opposite way of thought or conduct. We feel we will not be domineered over. We think we can devise for ourselves some much more attractive and desirable way of conduct; such an aggressive or ill-tempered person, we think, must have wrong principles as the foundation of his l'è, and we will not make the same mistake and imitate him. A teacher or leader, then, must above all things try to avoid the arousing of such antipathy to his personality, and to his manner of appeal.

Opposition is also likely to come if the teacher tries, as he must almost inevitably at times, to suggest actions too inconsistent with the youth's dominant tendencies of the moment, unless a crisis has arrived at which the youth is ready for a marked break with his old habits, perhaps for a genuine 'conversion'.

Incidental suggestion. Suggestion is less likely to rouse opposition and more likely to be accepted if it is worked in incidentally in the following way: suppose a teacher makes some stories

of missionary daring and enterprise the centre of a religious lesson, a plan by the way which would make use of the love of adventure and perhaps stimulate slight sympathetic fear and so produce a mood favourable for suggestion. The teacher may make the main bulk of the lesson deal with the efforts and adventures of the missionaries or the strange ways of the natives, with a tacit assumption throughout that the success of their mission is of tremendous importance. The supreme worth of Christianity is thus suggested incidentally – while a sympathetic attitude is encouraged by the enlisting of the pupils' sympathy with the heroism of the missionaries.

Similarly, if the pupils discern that a teacher takes it for granted that they will not betray his trust or that they will not tell lies because such things are not done by decent people and are too bad to be thought possible, then the suggestive power of these ideals may be considerable.

Desirable qualities in the teacher or leader. We have seen that if the child is under the spell of the teacher's personality he will be more suggestible. Hence the following qualities have been enumerated as desirable for the school teacher.¹

(1) Friendliness combined with the impression of superiority. There should be some reserve and self-control.

(2) Some degree of inscrutability or mysteriousness which leaves the child with a certain wonder.

(3) A vivid interest in, and feeling for, the ideal which he is setting forth.

(4) Sufficient knowledge and general culture to command the respect of his pupils.

To these we may add (5) Experience of life, which appeals to the young. For the encouragement of the many ex-Servicemen who have taken up teaching or youth leadership, it may be confidently asserted that the man who has been in one of the forces, especially if he has travelled far and been in actual fighting or at least in danger, will at once have a great 'pull' over young people.

For moral influence and leadership, sincerity, single-minded-

¹ See M. W. KEATINGE, *Suggestion in Education*.

ness, and complete devotion are the supremely important things. A teacher cannot make himself impressive merely by willing to be: and any pretence or acting will be seen through in time. In a moment of thoughtlessness we shall betray ourselves. We must remember that when we least think of it we are influencing our pupils; we are suggesting unconsciously. The central element of the highest type of suggestion is genuineness, absolute sincerity, and real earnestness.

The limits of suggestion. I have already mentioned certain limitations to the possibility of suggestion, for example, that it is unlikely that the suggestion of beliefs or attitudes, too violently opposed to the dominant beliefs or fixed attitudes of the person concerned, will be successful, but there is also an ethical aspect of the problem of suggestion. How far has a teacher or leader the right to use suggestion to mould the beliefs and attitudes of his pupils?

In the first place we must recognize that, whatever a teacher may think on this question, he cannot avoid having some suggestive influence. Indeed, the very restraint with which a teacher speaks of his own convictions or reveals his attitudes may sometimes make his influence the greater: pupils see that he is not attempting to be dogmatic or to force upon them his own peculiar attitudes and enthusiasms. In the second place the most important things which can be suggested are surely those fundamental principles and attitudes held by practically the whole adult community, such as the excellence of truthfulness, of fairness, kindness, and justice, and the hatefulness of cruelty, deceit, meanness, and so forth.

At times, however, questions arise on which there are not such universal views, e.g., in the teaching of History or of Civics the teacher will come across problems of government, economics, social justice, and so forth, on which opinions vary. Here it seems right that he should be more restrained, but the essential thing that he should put before all else is the ideal of impartiality and fairness in judgement: that he should seek to lead his pupils to try to find the truth, to be ready to consider both sides of the question. Thus, paradoxically, his own suggestive influence should be directed mainly towards making the

pupils eventually independent of suggestion and indeed impervious to it.

Imitation. In this chapter we have sometimes referred to the effect of suggestion on actions, and its importance in the training of character. But when the suggestion is made merely by a specific action on the part of the teacher, rather than by the suggestion of an ideal or attitude, it is well to use the term 'imitation'.

Imitation may be of two kinds. First, there is *deliberate or purposive imitation*. When a child sees another manage to do something, e.g., climb a tree, which he himself wants to do, he may note the method, say, getting his foot on a certain notch and then grasping a branch above. He then may deliberately adopt the method for the sake of the end in view.

There is, however, another type of imitation not so generally recognized, which I would call '*Primary Imitation*', as it is found very early in the child's development. It is not a tendency to imitate anything and everything seen, but its conditions can be observed in a mere baby and the types may be listed as follows:

(1) The earliest examples are the imitation of actions (e.g., making speech sounds), which there is already an innate tendency to perform.

(2) The imitation of actions which intensely interest the child, which he watches with absorbed attention, e.g., putting out the tongue, or the imitation by 'puffing' of his father smoking. I often noted that my children at about twelve months would gaze as though fascinated while I smoked and then they would throw back the head and puff in a similar manner. At eighteen months a child would hide his face in an open book and start muttering in imitation of my reading aloud.

(3) The imitation of actions seen in a picture or heard described in a story, e.g., of children skipping, as though to realize more fully the experience described.¹

¹ I have given further examples of imitation and the results of a series of experiments as evidence of these types of imitation, and have discussed the psychology of imitation much more fully in *The Psychology of Early Childhood*, Chapter X. See also J. PIAGET, *Play, Dreams, and Imitation in Childhood* (1951).

All these types of imitation occur also in later childhood and sometimes in adults. The unconscious imitation of local accents in speech is a good example. So is the involuntary imitation of mannerisms. Two of my boys, at periods separated by over two years, studied under a master who had the unfortunate habit of sniffling. Each of the boys acquired the habit while in his class, but dropped it shortly after promotion to another class.

I asked two of my classes of University graduates to report examples of involuntary imitation which they had shown since early childhood. Out of eighty-one women, fifty-eight gave instances of their own; out of seventy-five men, twenty-three reported instances of such primary imitation. The examples they gave referred chiefly to speech or facial mannerisms, or to the imitation of movements in watching games; a few students reported the unconscious imitation of the handwriting of some admired person.

This last point recalls a fact I noted in my own experiments on imitation. A child will sometimes imitate the action of its beloved mother, but of no one else — another point in which the psychology of imitation recalls certain things in our discussion of prestige suggestion. Thus, admiration of the leader of a gang will lead a junior member of the gang not only to imitate his actions (sometimes unconsciously, sometimes acting, and sometimes with serious intent), but will make the junior more suggestible to the leader's ideas and ideals.

The decrying of deliberate imitation by some modern teachers on the ground that it cramps self-expression is well criticized by Professor Nunn.

'The most original minds [he writes], find themselves only in playing the sedulous ape to others who have gone before them along the same path of self-assertion. In his earlier works we cannot distinguish even the voice of Shakespeare from the voices of his contemporaries. Imitation, at first biological, then reflective, is, in fact, but the first stage in the creation of individuality, and the richer the scope for imitation the richer the developed individuality will be.'¹

¹ SIR T. P. NUNN, *Education, its data and first principles* (3rd edit., 1945), p. 57.

Gregariousness and sociability. I take this topic next as it has a rather close relation to suggestion and imitation: for a constant seeking of the society of others will clearly give greater opportunities for imitation and suggestion to occur.

The term 'sociable' is, like other popular terms, too vague and too wide in ordinary usage for more exact psychological studies. Thus it is uncertain sometimes whether it implies:

- (a) a frequent tendency to seek and enjoy the society of one or two chosen friends; or
- (b) a liking to be one of some particular gang or group; or
- (c) a liking to be in any large company or crowd; and
- (d) a habit of making oneself agreeable to people by talking to them, and showing an interest in their affairs.

The term 'Gregariousness' has the more specific meaning of (c) above, though it may be a strong element also in (b). Its fundamental nature may be indicated by the instinct shown by some pack of herd animals. When one of these animals gets isolated from the group he often shows distress; a buffalo, or even sometimes the domestic bullock, on finding his herd again will push into the midst of it, as though seeking to feel safety with the close contact of his fellows. I have seen a foxhound who had lost his pack, on returning to his own kennels and finding the pack still away, set up a prolonged dismal howling.

Even in human beings one can find something closely corresponding to this gregariousness. As McDougall has pointed out, the attraction of, say, a football match or a play at the theatre would be much less if one was almost an isolated spectator. Some people, indeed, seem to love a crowd and being with a crowd for its own sake. Once when we were having a family holiday in a quiet country place, we sent off our maid and nurse for a day's trip to a busy seaside resort. I asked the elder one on their return how she had enjoyed it, and her face lit up with pleasure; 'Oh, it was lovely,' she said, 'you couldn't see the sand for deck-chairs.'

No doubt education, and the development of an interest in more reflective intellectual affairs, lessen this mere liking for

the crowd, though I confess to enjoying a cricket match, or even a lecture, more if there is a goodly company. The increase of emotional excitement by the sympathetic induction of emotions is one factor in encouraging the gregarious tendency, but it does not seem to be the only one. If we study the beginnings of this gregarious tendency in childhood we find that for the mere infant, though he usually has a dislike of loneliness, the craving for company can be satisfied, first by the mother, or one or two people he knows well, and later by two or three of his own friends. Soon, however, he shows a tendency to wish to enter a group, to play with the mass, and the child in, say, the Infant School who usually prefers to stand aloof is probably hardly normal. At about eight or nine years there is a more marked tendency to form groups. It is, however, in early adolescence that the gregarious tendency shows itself more decidedly, and when most clubs and gangs are spontaneously formed by the young people.

Suppose the youth has this strong wish to be with his fellows: he is more likely to be welcome if he fits in with their way of thinking and acting. Hence the gregarious impulse itself co-operates with the tendency to imitation and with suggestibility. Thus the group tends to exercise an important, and often decisive, influence on what the youth thinks and does. We shall refer to this again when discussing adolescence and social education.

Sociability. We have seen that this is a rather vague and general term. Yet it covers a group of relations of extreme importance in moral training and the development of character. We shall discuss it further in later chapters. Here I would simply point out its complexity and its relation to some of the other innate tendencies we have discussed.

The mere infant when first introduced into a Nursery School usually shows chiefly shyness and self-submissiveness at the sight of older active children who have already learned to play together.¹ Then at the approaches of others he may respond

¹ Excellent concrete descriptions of the social behaviour of young children and its development in the Nursery School will be found in DR K. BRIDGES' *Social and Emotional Development of the Pre-School Child*.

according to the kind of approach. If it is aggressive, he is likely to resist, till he learns by experience that it does not usually pay. If the approaches are friendly he may join in — imitating the play of another, or sharing the enjoyment of a toy. Soon he begins to initiate approaches, and here is the main element in sociability. It seems to depend at bottom on the craving of the various impulses to satisfy themselves, or the response of some impulse to the appeal of others. The self-assertive impulse prompts the child to show himself the equal of others: curiosity may lead him to notice the doings of others, and to ask 'Why?' or to imitate them in order to find out whether he enjoys doing the like. So the tendency to play at some new attractive activity comes in. Or if the child is enjoying something he may seek the intensification of enjoyment gained when another enjoys with him; if another child is in distress he may respond with sympathetic distress and with active help; at other times self-assertion may prompt him to take the lead and try to get others to imitate him.

Thus many varied types of approaches to others may be made, the most frequent type of approach made by a particular person depending upon the relative strength of his various tendencies. Hence we see that we cannot find one trait or tendency which we can properly label 'Sociability'. Even if we make it indicate merely the degree of frequency with which any kind of contact with other persons is sought, we leave out the equally important responsiveness to the approach of others. If we do confine the term to seeking contacts, then we find that in this respect even young children, of only two years or so, already vary enormously, some making many approaches to, or 'contacts' with, others, some remaining very passive, and a few keeping aloof.

Here we refer to all kinds of approaches, aggressive or friendly. (Some playful aggressive actions are really friendly.) But the same degree of difference exists if we confine our interpretation of 'sociability' to sympathetic or friendly responses. Thus, in one interesting investigation in which groups of children in nursery schools were observed over long periods and all their actions noted, extremes as great as the following were

found.¹ One child J, aged 2 ; 1 made in a given time as many as seventy-eight sympathetic responses to others. Four others in the same group of nineteen made only one such response and one child made none. These children varied similarly as regards the number of friendly responses they received. One received sixty-one responses, J received twenty-four, others as few as five or even two. Incidentally, it may be noted that the boy J was observed to be not only the 'biggest fighter' of the group but also 'the greatest sympathizer'. In other words, he was nearly always having 'something to do' with some of the others. Even the aggressive type may seek its object. 'I must have someone to tease,' one boy remarked. This inclusion of aggressive approaches prevents one using the popular term 'sociability' here, since sociability surely implies friendliness, though by no means identical with altruism. Nor can we yet call it 'gregariousness', as it hardly needs a group or crowd. But such seeking of individual contacts, whether for sympathetic or aggressive purposes, may well mark the beginnings of the development of genuine gregariousness.

Sociability and experience. No doubt the tendency to seek the society of others is profoundly modified at an early age by the results of experience. In the case of the child's attitude to the mother, his experience of food, comfort, and help received from the mother creates a bond without any previous sociable impulse. But that seeking the society of others is not entirely the creation of experience seems to be shown by three things:

- (1) Mere babies show an interest and delight in the presence of other babies and make friendly advances, though they have never gained any previous satisfaction from them or from other babies.²
- (2) There seems to be a strong tendency to form gangs and set up 'clubs' in later childhood and adolescence, sometimes apparently chiefly for the sake of forming a group.
- (3) The satisfaction of being in a crowd already referred to

¹ See L. B. MURPHY, *Social Behaviour and Child Personality* (1937), pp. 127 and 138.

² See my *Psychology of Early Childhood*, Chapter XVI.

under 'Gregariousness' seems hardly explicable on the basis of mere experience.

Gregariousness, privacy, and loneliness. The existence of an innate tendency to seek the society of others (very strong in some, weak in others) is not inconsistent with a desire to be alone at times, any more than the existence of self-assertiveness in a man is inconsistent with a tendency to submissiveness at other times. Prolonged social intercourse say, on an intellectual level, is apt to be fatiguing, except between friends of rare affinity of mind, though the 'tough' type can keep up hearty social relations indefinitely. Also the presence of a social group may obviously come into conflict with some strong interests or aims which need privacy: for example, of the student or writer, or of the religious man who practises prayer and meditation.

Some psychologists regard the gregarious impulse as a reaction to the insecurity of loneliness, of separation from 'the herd'. The loneliness felt by some may be due to an unsatisfied craving for company which they have no opportunity of satisfying; but in some cases, it may be felt in the presence of many people because there are none with whom the deepest thoughts and feelings can be shared. It is only in extreme cases that we need attribute it in adults to an unconscious longing for the long-lost protective affection and companionship of the mother.¹

¹ As suggested by DR I. D. STUTIE in *The Origins of Love and Hate*, p. 19.

CHAPTER IX

SEX AND SEX EDUCATION

Sex as an 'appetite'. On the purely physical side, the sex impulse may be termed an 'appetite', but taken as a whole it is far wider than that. An appetite is best exemplified by hunger and food-seeking, which are so obviously fundamental motives for human activity, that in this form they hardly need discussion in this book. The sex impulse includes an appetite in that, as with hunger, a certain physiological condition of the body is an essential factor for the arousal of one aspect of the sex instinct. In the male this physiological aspect shows itself in the tendency to nocturnal emissions if the natural craving is not satisfied; and in both sexes it is the basis for the impulse to masturbate.

In this book our interest in sex is concerned mainly with the problems of sex education and of co-education, and with the question of repression and sublimation, the last of which can only be treated when we deal with the unconscious.

Sex in infancy and the supposed Oedipus Complex. Freud maintained that sex impulses and interests developed in the first few years of life: and that the little boy of three or four usually feels hatred for his father as the rival in his mother's affections. Elsewhere I have discussed this view fully and have given evidence that Freud's statement as to a growing dislike of the boys for the father at this early age is usually the reverse of the facts.¹ The boy (or girl) naturally tends to become more attached to the father as the latter begins to play with him more: as a mere baby he is more exclusively the care of the mother.

A good deal of nonsense is talked about signs of early sex development. Curiosity about the birth of babies and the sex

¹ See my book, *The Psychology of Early Childhood*, Chapter XVII on 'Affection for Parents, and the supposed Oedipus Complex', and Chapter XVIII on 'Sex Development and Sex Interests'.

organs is sometimes given as a sign of sex development. But the appearance of a new baby in the home is obviously a very remarkable thing, and the child naturally wants to know how the baby came there. Any hush-hush attitude shown by the parents will increase curiosity, but that implies no sex feelings or impulses.

Also an infant is intensely interested in his own body; he feels his hair and examines his toes. In the course of this exploration he naturally finds the genital organs, and exploration may lead to his playing with them. Possibly even in the first years this yields more pleasant sensations than play with most parts of the body, but we have no reason to suppose they are anything but that, and the evidence suggests that any genuine masturbation in infancy is rare.¹

Again when the little boy finds his baby sister lacks genital organs like his own his curiosity is aroused. Why this difference he wonders? Here also, if the parents reprove him and say he must not talk about such things, it is not surprising if he begins to have a guilty feeling about his curiosity and shows a stealthy interest in the differences of the sex organs. Several parents who adopted an entirely open attitude about sex differences, appearing naked before their children from the time the latter were babies, reported to me that the children never showed any curiosity about sex differences.² Some teachers approve of nudity, in bathing or changing, being encouraged in Mixed Infant Schools, in order to produce a more healthy attitude about sex: but I am very doubtful as to the effects of this so long as the parents at home continue to regard self-exposure by their children as shameful. The conflict of the two attitudes might cause serious difficulties. The young people of today, with their mixed bathing and sun-bathing, are breaking away from earlier conventions, and will tend probably to adopt freer attitudes when they in turn become parents.

Sex maturation at puberty. When the sex glands mature at puberty new factors emerge. The youth is now capable of the act of reproduction: and nature provides at the same time the

¹ See my *Psychology of Early Childhood*, Chapter XVIII.

² *Op. cit.*

urge to take a new kind of interest in the opposite sex. I want to call attention to this clear case of *maturation* in mental development; it emphasizes the fact that inborn tendencies do not necessarily reveal themselves at birth or for months or even years afterwards, though most mature much sooner than the full sex impulse.

The age of puberty varies greatly. In about half the number of girls menstruation begins between the ages of 12½ and 14½; but extreme ages on record are below 3½ and as high as 20 or more. In boys puberty begins usually between 13½ and 15½. Records of selected gifted children suggest that there may be some tendency for brighter children to begin puberty a little earlier than the average; but this is not yet established.¹

At puberty we see both aspects of the sex impulse in a more intense form, the physical side resembling a craving for relief from the sex urge. This results, in most cases, in masturbation. The results of confidential questionnaires indicate that masturbation is indulged in by the great majority of boys, and the majority even of girls.² This is an important and difficult problem for the guiders of youth. The general trend of opinion among medical men and psychologists is that in the past the bad physical consequences of masturbation were greatly exaggerated. Much mental suffering, and, possibly, neuroses, have been caused by telling young people that masturbation would ruin their physical health or cause madness. Often this suggestion would come only after the habit had been formed, and so serious mental disturbance followed. The tendency now is to regard the severe mental conflict that the youth passes through as a mental strain on him; feelings of guilt and the thought of serious consequences may cause additional trouble.

On the other hand, it is thought that occasional masturbation is not physically serious (though very undesirable on other grounds), unless it is indulged in frequently and continuously

¹ TERMAN, *Genetic Studies in Genius* (1925), Vol. I, pp. 207 and 209.

² See HAVELOCK ELLIS, *Psychology of Sex* (1933), pp. 85 and 86. The frequency of masturbation among girls and women has an obvious bearing on the popular idea that women are not endowed with strong sex impulses until aroused by male courtship. That such arousing is, however, normally necessary for the full experience of sex-excitement is no doubt true.

into young manhood and young womanhood, when the outlet for the physical sex urge should be a normal one.

Changes in attitudes towards the opposite sex. As regards the mental aspect of the sex development, this passes through several stages. In middle childhood boys and girls usually show no special attraction to the opposite sex. Indeed, boys prefer to play with boys as a rule because generally they prefer games involving greater physical vigour, some rough and tumble, wrestling, fighting, etc.

At early puberty there often appears a certain shyness, or even antipathy towards the opposite sex. The boys are apt to regard the girls as soft and weak, and girls think of the boys as rough and ill-mannered. They are very critical of one another. This does not seem to be universal, but among 220 university students (120 women and 100 men) from whom I have obtained reports in confidential questionnaires, 43 per cent. of the men and 45 per cent. of the women reported this aversion from the opposite sex at some time during adolescence.¹

This period of antipathy, even when it occurs, usually gives way to an intensified interest in a member of the opposite sex. This was reported by 84 per cent. of my men students mentioned above and 61 per cent. of my women students, as occurring already during adolescence, i.e., between twelve or thirteen years and eighteen or nineteen years. So strong is this fundamental tendency during adolescence that where sexes are largely isolated, e.g., in girls' schools, and boys in boarding schools, it often seems to find an outlet in more or less passionate devotion to a member of the same sex; thus 50 per cent. of my men students and 72 per cent. of the women students confessed to experiencing this homosexual tendency during adolescence. It is especially common in girls' schools, going by the name of a 'pash', 'crush', or 'g.p.'. It is less common in co-educational schools; this I found by inquiry among 267 graduate students (in other classes than those just mentioned). Over one-quarter of these had been in co-educational schools. I found that, while 45 per cent. of the women from girls' Secondary Schools re-

¹ See G. W. VALENTINE, 'Adolescence and Some Problems of Youth Training', *B.J.E.P.*, 1943, 13.

ported having felt a 'strong attraction' towards one or other of the mistresses, only 25 per cent. of those in mixed schools had experienced this.¹ Among the men in all schools only 5 per cent. had felt any such attraction towards a man teacher, whereas 34 per cent. had felt it towards a fellow-pupil.

Homosexual attraction as a substitute for normal. Not only do these tendencies appear much less frequently in co-educational schools where the natural relationship between older boys and girls has a better chance of developing; but other evidence also points to homosexual affection being a substitute for the natural affection of the boy for the girl, and vice versa. This is borne out by the fact that in boys it is almost invariably felt by the older boy for the younger, towards whom he feels something of the protective impulse so characteristic of the male in relation to the female; whereas among girls, it takes the form of devotion to an older girl or an adored teacher and is more submissive in its nature. I may illustrate this by the report given me by a senior prefect in one of our best known Public Schools, who was surprisingly confidential in his talks with me. Some months later he wrote me records of his experience; he had been intensely devoted to a younger boy in the school, feeling, as he said, a depth of real affection one normally expects to feel only towards a member of the opposite sex. When, however, he went away from the school for the long vacation he stayed with a friend and fell in love with the friend's sister; whereupon the interest in the boy at school faded. On his return to school for the next term, however, he found the memory of his friend's sister losing its power over him and the intense affection for the boy returned.

From other evidence I have gathered, it seems that this homosexual tendency is very subject to suggestion; hence the tendency is much more widespread in some schools than in others. One senior boy even spoke of its being 'fashionable' in his school for the prefects to have some younger boy in whom

¹ The smaller percentage of such 'crushes' reported in these classes 'as compared with those previously referred to' is no doubt due to the fact that the age specially concerned to school mistresses. The larger percentages included other girls avowed objects of special devotion.

they took this special interest. Another reported that in his (residential) Public School, fourteen out of forty sixth formers were 'in love' with some junior boy. Another observer reported that the frequency of such homosexual attractions in a Public School varied with the particular House in the School.¹

My own evidence, based upon conversations with and reports from students and others, also suggests that the more physical side is almost entirely absent, even in schools where the tendency to homosexual affection is strong; on the other hand, reports show that the mental distress caused by the tendency among both boys and girls is often much greater than is commonly supposed.

It would seem to be a mistake for this tendency to be treated as reprehensible or disgraceful, as it seems to be, more particularly by some women teachers. No doubt, if extreme devotion is revealed by some girl towards a teacher, it is well that this should be gently discouraged. On the other hand, it may prove of value, if rightly used, through increasing the influence of the teacher over the girl.

Among 300 cases of homosexuality studied in one investigation, it was found that practically all proved only temporary and were followed by normal heterosexual experience.² In reading essays on adolescence written by many women students I have noted frequently that a girl who has experienced an intense affection for a woman teacher, even to the point of considerable mental suffering, has turned out to be a young woman of fine character and marked ability; so it need not be regarded as a sign of instability.

On the whole, the evidence as to homosexual tendencies is a strong argument in favour of mixed clubs and of co-education for adolescents, though the latter is of course also dependent on other important questions of organization.³

The mature sex-impulse in later adolescence. Though the complete maturity of sex impulse and interest varies greatly with

¹ See W. R. HICKS, *The School in English and German Fiction*, 1923, p. 55.

² See R. L. DICKINSON and LAURA BEAM, *The Single Woman: A Medical Study in Sex Education*.

³ The question of homosexual attraction is further discussed in Chapter XXXIII—*Adolescence*, Part I., p. 552.

different individuals, we may take it that usually it is fairly mature at least by late adolescence, that is eighteen, or nineteen years in boys and a year or two earlier in girls. It is clearly impossible to have exact knowledge as to varying strengths of the impulse in different individuals, but the frequency of masturbation, even when it involves severe conflict and produces shame and disgust, indicates that in a large number of young people the sex impulse may be intensely strong at this period.

Among many primitive peoples the period of later adolescence is accompanied by some sexual intercourse, even before marriage, but under our present-day conditions, both social and religious, such intercourse is strongly condemned; yet even under modern economic conditions, early marriages are still very difficult.

Here we touch difficult social and economic problems which it is not primarily the business of the psychologist to solve, though our discussion on repression and sublimation in the next chapter will have an important bearing on them. Psychology is only concerned with the description and analysis of the experiences at different stages; but there are certain elements of the development of sex which it is important should be realized more fully if sex education is to be wisely conducted, and if the mental attitudes towards sex and marriage in later years are to be healthy and normal. Before discussing sex education, it should first be noted that certain reflex and emotional sex responses are not under voluntary control, though the individual may to some extent avoid the presence of members of the opposite sex who stir these emotions, or pictures and other stimuli which are sexually stirring. The voluptuous scenes on the cinema screen, for example, may stir the adolescent, at least boys, to sex excitement, which may be extremely difficult to resist. I have often thought, in comparing films which are labelled for 'adults only' with those which are 'universal', that those responsible for this classification pay far too little attention to the fact I have just mentioned. So frequently the 'A' films are primarily concerned with unconventional *ideas* about marriage and divorce, etc., which would have relatively little

immediate influence upon sex impulses, whereas the universal films may be full of material which will stimulate sex.

Another fact to be stressed is that a romantic tender affection or an idealizing attitude to a girl (or boy) may precede the experiencing of any physical sex urge towards the object of that affection. In a class of eighteen men students I found eleven who were confident that they had felt such romantic love, even as much as two years before puberty, and so with eight out of thirteen women students. Even after the physical side of sex has developed, it may sometimes be entirely dissociated from the love felt for a member of the opposite sex. It is possible for a boy to be experiencing so strong a sex urge that he masturbates even against the dictates of conscience, and yet for him to feel nothing of a physical urge directed towards the girl with whom he finds himself in love. This is no doubt due to a natural shyness and reservation in the first approaches, probably felt especially strongly by girls. I mention it because unless the importance of this more idealistic and romantic side is borne in mind, some people are apt to be too alarmed about the association of the sexes during adolescence, whether in co-educational schools or in Youth Clubs; and secondly, because in the process of sex education too great an emphasis may be laid on the physical side and too little recognition given to the more romantic and spiritual aspect.

No doubt this romantic, idealizing attitude can be overdone, and some argue that the mixing of young people in co-educational schools or mixed clubs is a good thing because it prevents a youth growing up with the idea that women are angelic, ethereal creatures far above him, only for the youth to be brought heavily to earth through later experience. There is no doubt considerable truth in this argument, though boys with sisters are hardly likely to idealize women too much. Nevertheless, it would be a pity to destroy altogether the idealizing tendency in youths, and, indeed, it has a rational basis in that most women possess to a greater degree certain of the gentler, tender personal qualities than does the average man, and, to this extent, she should call forth an attitude of admiration and even, at times, of something like worship.

In any case, to disillusion the youth about the opposite sex is not the main justification for encouraging the mingling of boys and girls during adolescence and later. One good reason we have already seen; another is so that they can learn that they can co-operate in many forms of work and play. At a later stage of early manhood and womanhood, its supreme value is to widen the knowledge of members of the other sex and of their types, and so make more likely the wise choice of a mate. It is unfortunate that marriage should so frequently be based largely on proximity and on a narrow range of choice. Even if reason and calm judgement have not much to do with the choice of a mate, a widened range of friendship and of possible choice gives a better chance for that mate to be chosen who possesses the greatest number of traits which make a special appeal to the other.

Sex education. A full discussion of sex education would not be in place in an introductory book on psychology. The reader must be referred to several recent useful publications on the subject given later in this chapter. Here I can only indicate certain psychological aspects of the problem. If I seem to stress the need for caution and for further research, I hope it will not be taken as indicating opposition to the extension of sex education; on the contrary, I advocated it over thirty years ago, long before it was a fashionable topic. We do, however, I think, need more information from large numbers of young people of different social grades as to what their special sex difficulties have been and how any sex instruction received has affected them.

A few things we can be fairly confident about:

(1) At least girls should be told the facts as to menstruation and boys informed about seminal emissions before they are likely to begin, otherwise grave mental anxiety may be caused, as illustrated by the story of the student's fears related in Chapter I.¹

¹ That it is possible for such instruction to be given too early was brought home to me only recently. A serious youth of about eighteen was sent to me by his father because of the son's apparent depression and difficulties while at a residential school. I found that the youth was greatly distressed by

(2) We should recognize that mere information, however full, about sex will not solve the problem. As McDougall points out, medical students have not noticeably higher standards as to sex conduct than the average young man, in spite of their detailed knowledge, including the facts as to horrible venereal diseases. Country children are usually familiar with the main facts of birth and sex among animals at a very early age, yet we have no evidence that they are more 'moral' than town children. B. L. Henriques, indeed, after long experience of youth clubs in London, states that working boys are already familiar with the facts of sex, as indeed most boys probably are before leaving school.¹ Instruction is needed, but also something more. An attempt must be made to establish a healthy *attitude*, and that is why I have headed this chapter 'sex education' and not 'sex instruction'.

(3) As regards instruction we may agree first that the spontaneous questions asked by very young children should be answered as truthfully as possible and with no suggestion of shame, or of there being something essentially disgraceful and wrong about sex. All would agree too that the child should not gain his first knowledge of sex from some older child or adult who imparts it in a way which may stimulate the child's sex impulses prematurely, or place the whole matter in an atmosphere of 'smut'.

We saw in discussing suggestion that an emotional state increases suggestibility. Now if a child is initiated into the secrets of sex at adolescence when it has become emotionally toned, he is likely to be highly suggestible to the informant, and a wrong attitude to sex may thus be adopted from the start. Cases are on record in which youths have become delinquents through suggestions made at such times. Thus, one youth, who acquired

nocturnal emissions, fearing that something was seriously wrong with him. He was quite ignorant about their normality and thought he had never been warned. It was proved later beyond doubt that the head master of the school had given a talk about these and other sex matters. This youth then remembered that he had, at about twelve years of age, heard this talk, but said he felt at the time that it did not apply to him, and he did not grasp the significance of it.

¹ See B. L. HENRIQUES, *Club Leadership* (1942), p. 175.

the strange habit of stealing only horses and traps, was found to have been initiated into the secrets of sex by a man who was driving him in a dog-cart at the time.¹ All this is an argument for two principles of procedure. First, that the child should be taught some of the main facts as to sex before he reaches the stage of adolescence, when it becomes emotionally exciting, though some repetition and extension is desirable during adolescence; secondly, that he should be taught by a person who can adopt a calm, rational attitude himself.

Here we are met with the great difficulty that the attitude will be set in most cases already by the parents, and this is likely to be one of 'hush hush' and extreme secrecy and the suggestion that it is naughty to speak about it. This may be complicated with half-concealed jokes and innuendoes by older brothers and sisters and, perhaps, the father. My own view, indeed, is that sex education can never be satisfactorily carried out without the previous education of the parents themselves and without gaining their co-operation in dealing with the early years. Those who have treated psychological patients know the frequent ill-effects of suggestions made by parents that there is something inherently wicked about sex, backed up too often by a misunderstanding of the phraseology of the Bible and Prayer Book about the 'lusts of the flesh'. One of my women patients, for example, who loved her husband sincerely, nevertheless found intercourse revolting, and this was threatening to ruin their marriage. In conversation I discovered that her mother, whose influence remained too strong, had impressed upon her as a young girl how disgusting and shameful sex was. The establishment, after a few sessions, of a different attitude resulted in a happy change in the relations with her husband.

As to the material most suitable for instruction in the Infant and Junior Schools, I must refer the reader elsewhere.² Broadly, it will be found that in the early years the elementary

¹ See W. HEALEY, *Mental Conduct and Misconduct*, 1920, p. 108.

² Excellent chapters will be found in *Sex Education*, 1943, by C. BIBBY. See also the Board of Education pamphlet No. 119 on *Sex Education in Schools and Youth Organisations*, 1943.

biology is the best introduction, including some elements of human physiology. The keeping of pets and the familiarity gained thus with the process of sex intercourse is also recommended. A word of warning should be uttered here. If the first instruction is being given to adolescents the study of animals is surely very incomplete, especially as it leaves out that supremely important element of tender affection which we have recognized as an essential element of the fullest and best sex relationship. This more spiritual aspect should indeed be emphasized in the whole process of sex education. It is the strongest foundation for the discouragement of promiscuous intercourse if we can convince young people that the fullest enjoyment of sex relations is impossible without real love, and that the mere indulgence in a physical form of relief tends to be degrading, whether it takes the form of promiscuity or long-continued masturbation.

Some maintain that to give instruction to a whole group of children is to give suggestions to innocent boys and to encourage the worst type to talk more freely.¹ This may, I think, be a danger where adolescents are concerned, and where many of the young people have not received much previous instruction about sex, and this very danger is another reason for teaching the main facts to younger children.

¹ See B. L. HENRIQUES, *Youth Leadership*, Chapter XII.

CHAPTER X

THE UNCONSCIOUS, REPRESSION, SUBLIMATION, AND SOME FREUDIAN IDEAS ON SEX

*Reasons for studying the psychology of the unconscious.*¹ The psychology of the unconscious was brought into prominence some forty years ago by the work of Freud and others working with him, especially Jung and Adler, who afterwards broke away from Freud and followed independent lines. Freud's doctrine of the unconscious had both fanatical supporters and violent opponents. There is no doubt, to my mind, that his views contain a great deal of speculative theorizing which cannot be substantiated by evidence, yet there are good practical reasons why teachers and social workers should study this psychology of unconscious processes; indeed, a comprehensive study of even elementary psychology is impossible without it.

First of all, it should be studied at least in order to be able to criticize certain educational doctrines which claim to be based on it, especially the view that all discipline and restraint are wrong because 'repression' has been found to be the cause of many neuroses and nervous disorders. I do not suggest that Freud and other psycho-analysts are entirely responsible for the development of this doctrine of no discipline for the child, but erroneous interpretations of Freud's doctrine of repression and illogical conclusions drawn from it have been among the main bases. There are some people who go to the extreme of saying that a child should always be allowed to 'express himself' in whatever way he feels inclined; and that there should be no punishment at all. In some experimental schools children have been allowed to do almost whatever they pleased; in one

¹ In this chapter I use at times the term 'the unconscious' for brevity, instead of 'unconscious processes'; but it must not be taken to imply a separate 'unconscious self'.

school I know of, even violence by one child to another was not punished, until one little boy actually stabbed another with a pocket knife.

The chief reason, however, for studying this psychology of the unconscious is because there is a great deal of valuable help and suggestion to be gained from it, not only on some points of discipline but also on the interpretation of human conduct and on the way in which mental disorders are caused. The fact that doctrines are exaggerated does not prove that there is no truth in them.

These new ideas have been an enormous stimulus to psychology in recent years, and it is an undoubted fact that they have helped in curing many minor mental disorders (neuroses); if the ideas of psycho-analysts have their own dangers, they are not best met by shutting our eyes to them, for already the ideas have spread widely, through the Press and through popular journals and magazines. They have even reached the ears of criminals and young delinquents who sometimes use them in self-defence. One of my former students told me recently that a boy in his class had been before the magistrates for some misdemeanour. On his return to school the master asked the boy what the magistrate had said. 'Oh, he told me I ought to express myself,' the boy replied.

The need for the study of normal persons. We must bear in mind that Freud was primarily interested in what are popularly called 'nervous' disorders. The main sources of information on which he based his ideas were the patients who came to him because of such disorders. The study of normal persons may show, and, I think, does show, that some things which are true of abnormals are not true of the majority, and that some things found in abnormals are not necessarily signs of abnormality. For example, I remember hearing a lecture many years ago by one of the most distinguished medical psychologists concerned with child guidance work. He referred to a case of a girl whom he had examined, and who had told him that whenever she went into a room she felt compelled to count the number of windows in it at once; this he took to be a sign of mental instability in the girl. Feeling sceptical about this, I made in-

quiries among about 300 University graduates and found that about 95 per cent. or more had experienced some such 'compulsive obsessions' at one time or another. As these students were nearly all dealing satisfactorily with the trying situation of teaching under supervision and criticism, the majority could hardly be regarded as neurotic. Clearly, in studying evidence as to signs of abnormality, we must be careful to have a 'control' group of normal individuals.¹

Some main facts about unconscious processes. One main idea in Freud's psychology is that unconscious processes have a far greater influence on our conscious life than has been thought. As a matter of fact, psychologists long ago recognized the influence of the unconscious, especially in regard to dispositions and habits; but Freud went much farther. First of all, he referred to unconscious processes which never rise to consciousness unless dragged up by a process of psycho-analysis; secondly, he held that unconscious desires and impulses constantly lead to irrational conduct without our being aware of it. Let us now try to distinguish some undoubted facts from mere surmise. The evidence is quite clear on some points.

First, an intensely emotional experience can be repressed to the extent of forgetting, and yet can continue to influence mental life. (The repressed ideas of such an experience and its associated feelings and impulses would be called a 'complex'. The process of repression is discussed later, p. 129.) Of the many examples of this, there is one which has become a classic.² At the end of the First World War there came under the care of Dr Rivers, an officer who suffered acutely from claustrophobia, that is a horror of narrow shut-in spaces. He had suffered from this before the War, but it became so acute when in the trenches that he had a complete breakdown. Under the guidance of Dr Rivers and through recording his dreams, there came back what seemed to be memories of an early childhood's experience when he was shut in a narrow passage and a savage dog began

¹ I have dealt more fully with this question of evidence of, and the signs of, abnormality in *The Normal Child and some of his Abnormalities*, 1936, and in *Parents and Children*, 1937.

² DR W. H. R. RIVERS' 'In, into and the Unconscious' (1920), p. 9.

to growl. The officer was unable to say whether this was mere imagination or a real memory, but careful inquiry revealed the various details of his dream to be accurate. With this discovery of its origin, the claustrophobia completely disappeared within a few days.

A second undoubted fact is that recovery often follows the recalling of the repressed emotional experience and the readjusting of the patient's attitude to it; it is supposed that mental energy has previously been exhausted in maintaining the repression. Psycho-analytic literature is full of examples of this; the case I have just quoted may serve as one. I have given another example in Chapter I, p. 8 — the case described by McDougall of the man whose physical vigour was greatly increased immediately after the release of the repressed memories.

Dissociations and complexes in more normal persons. I suggest that there is another well-established fact, namely, that experiences not completely forgotten, but merely 'dissociated', may have an abnormal influence on conscious experience. The example given in Chapter I (p. 8) of the student suffering from occasional paroxysms of fear is a case in point. He had not really forgotten the worries of adolescence about sex developments, yet he had never thought of them as a cause of his moments of intense fear; and the realization that it was a groundless one resulted in the complete disappearance of the disturbing fears.

The second example I give illustrates the influence of earlier experiences not entirely forgotten, on mental disorders which appear only in the stress of war.¹ A young soldier came to consult me about the trouble from which he suffered. A van in which he was driving in France had been hit by a shell; his sergeant, for whom he had a great affection, was killed, and he himself was temporarily stunned. He recovered from this fairly quickly, sufficiently to get back into active work again, but for some months he suffered from an intense fear of the dark. This was greater when an air-raid warning occurred, but remained

¹ The example is quoted from my little book, *The Human Factor in the Army* (Gale and Polden, 1943), p. 91.

also at other times, even when there was clearly no danger, so much so that he was unwilling to go out with his fiancée after dark or to go to a cinema in the evening. By inquiry into his early life I was able to trace two experiences of his which he had not really forgotten, but had never thought of in connexion with his present trouble. One was at a very early age, when he had a rather serious accident in the dark. The other was an experience of profound emotion when, also in the dark, he had heard his father threatening his mother and hesitated whether he should burst in to prevent what sounded to the boy like attempted violence. Through our talking over these experiences and my pointing out their probable effect on his attitude towards the dark, considerable relief appeared after two or three visits, and he was then quite able to go out in the dark, and the intense, even physical discomfort – ‘turning over of his stomach’, as he put it – when an air-raid warning sounded had also disappeared.

I may give as a third example of dissociated but not forgotten experiences a somewhat amusing record. When I was lecturing on the psychology of the unconscious some years ago to a large psychology club in the north of England, I referred to the possibility of early childhood’s experiences affecting a man throughout life without his realizing the fact. In the discussion that followed, a man near the back of the room got up and said that my remarks about the influence of childhood’s experiences had made him wonder whether they applied to his own case. ‘I have a horror,’ he continued, ‘of sitting on a public platform; the seat next to the chairman’s is vacant because I won’t occupy it, although I am Vice-President of this club. What you have said has recalled to my mind an experience that I had when a little boy of about eight or nine. I was in a mixed school and I and some friends got into the girls’ cloakroom and dressed up in girls’ clothes. I alone was caught by the Headmaster and, as a punishment, he made me sit on the platform in the central schoolroom in those girls’ clothes for the rest of the day. This platform was passed by the children and teachers of the school constantly during the day and they made great fun of me. Now I am wondering whether you think that is the cause of my

horror of platforms and, if so, what would you advise me to do?" I replied that I thought it almost certainly was the origin. I suggested that as he now knew that he had a friendly instead of a critical audience, and that as it was obvious that he was not afraid of speaking in public or appearing prominent before an audience (as he was quite willing to get up and speak in the body of the hall), he should come up then and there, occupy his chair, and see what happened. Whereupon the Vice-President came up and sat on the platform and assured me that he was already feeling quite comfortable. The dislike of that early experience of a platform had become associated with platforms in general, without his realizing the cause. That Vice-President might be said to be suffering from a 'platform-complex'. As explained above, a 'complex' is usually defined as an impulse or an idea or memory of an experience, together with the associated feelings or emotions, which have been repressed to the extent of complete forgetting; but which continue to influence conscious experience and action at times. It is, I think, useful to extend the term to ideas or impulses and their associated feelings which are not quite forgotten, but dissociated in the sense given above.

Mental conflict: a cause of repression. So far I have only illustrated the fact that painful experiences may result in repression, but we must stress the fact that mental conflict is a main cause of repression. For example, in war there is conflict of fear and duty, made harder in modern war by the fact that, whereas in primitive warfare men were usually fighting a seen enemy and could nearly always be occupied in doing things, in modern warfare there is so much waiting and often no direct outlet for aggressiveness, and this probably accounts partly for many of the mental breakdowns in the Army.

Freud regarded sex as the main source of mental conflict and of mental disturbance. Now it would be futile to deny that the repression of sex under modern ideals and conventions does constitute a serious social and individual problem; yet we must make two comments on this view of Freud's. First, his position is based partly on his views as to early sex development in childhood; and as we have seen (Chapter IX, there is no

satisfactory evidence for this. Secondly, in discussing Freud's ideas, we must remember how widely he interpreted this term 'sex'. The sense of touch, the admiration of the beauty of form and colour, and of voice may all enter into the lover's enjoyment of his mistress. Freud then treats all enjoyment of beauty of form, sound, and touch as belonging to sex; indeed, he tends to identify the sensuous with the sexual, committing the logical error, so it seems to me, of assuming that because all A is B, therefore all B is A.¹

Nevertheless, even among those psychologists who think Freud exaggerated the importance of sex, there is general agreement that sex problems and the repression of sex are often important factors in the causation of many neuroses, even if other factors also usually enter in; but having said that, we must clear up some common misunderstandings about repression.

What is repression? First of all repression must not be regarded as identical with self-restraint, though of course self-restraint may include conscious repression – that is deliberately putting a thing out of mind. Repression is rather, according to the opinion of the leading psycho-analysts themselves, a shirking of a problem, or a refusal to recognize that the problem exists, involving an unconscious damming up of the impulse concerned.

There is also general agreement that a healthy solution of the conflicts, which sometimes involve repression, would be found if there were a frank recognition of the alternatives. Thus, suppose a man is faced with two alternative courses of action, A and B, both of which he desires strongly; then if he deliberately chooses A, fully recognizing that he must sacrifice B, and not trying to shirk the admission or the pain of relinquishing B, that is supposed to be a healthy way of reacting. If, on the other hand, in choosing A he tries to pretend to himself that he does not want B, or tries to put it out of mind,

¹ At times Freud himself seems to come near to the view expressed above; thus he writes of the 'component-instincts of sexuality' which 'show a great capacity to change their ... cat'. Hence new aims arise which are 'no longer sexual' but 'social in character', this being the process of sublimation. *Introductory Lectures on Psycho-Analysis* (1922), p. 290.

repression is apt to take place, and B may continue to have its influence on his actions as a repressed complex.¹

Secondly, Freud himself points out that licence is not a solution to the problem of sex-conflicts, for licence involves the repression of other tendencies, and the social consequences of licence are liable to land the individual in further conflicts of a different kind.

It is worth noting too that Freud himself, in speaking of the seriousness of repression, holds that it is a question of the proportion of (a) the amount of repression which takes place to (b) the strength of the nervous system of the individual: some people can stand much more conflict and repression than others.

The solution of conflict by sublimation. As we have seen, one way of solving a conflict is thought by many psychologists to be by the frank recognition of the alternatives and the conscious renouncing of one. This, however, would seem to leave it open for the conflict to recur indefinitely. A further and better solution is held to be found in sublimation. By sublimation is meant the deflection of an impulse from its original natural outlet on to a higher moral level. For the solution of conflict the deflection need not necessarily be on a *higher* level, it need only be socially permissible, so we may usually be content to use the word 'deflection' or 'deviation'.

We may take as an example the childless woman who finds some outlet for her maternal instinct in looking after other people's children in a nursery or creche. If she found it in devotion to pet dogs, that could hardly be considered 'sublimation', but it might be a case of 'deflection'.

The neatest example I know of genuine sublimation is to be found in the story of the 'Junior George Republic'.² In the early

¹ There is some difference of opinion among some of the leading analysts and medical psychologists as to the relative harmfulness of (a) conscious and (b) unconscious repression; but the general view is that fully conscious repression is not harmful. I think, however, that so far as present evidence goes, it is possible that sometimes the waste of energy is due to conflict rather than to repression. No doubt the analysts would reply that we do know that, when these repressions are removed and we get at the forgotten experience of the past, the individual is usually cured.

² See *Citizens Made and Re-made*, by W. R. GEORGE and L. BERGER STOWE (London, 1913).

years of this century, Mr W. R. George started a club for street boys belonging to gangs in one of the 'toughest' parts of New York. The neighbourhood was dominated by a notorious gang, the 'Graveyard Gang', who warred upon the neighbourhood and the police. One night they set upon Mr George, who happened to have been an expert boxer in the militia, and he dealt with them single-handed. His reputation with the gang as a boxer was increased by his defeating a local champion, and soon by his influence he persuaded them, instead of fighting the police or attacking innocent persons, to *help* the police in dealing with more criminally minded young people than themselves. Note that in this case it was just the same pugnacious impulse and love of adventure which was being satisfied, but in a lawful instead of unlawful way. Whether the sex instinct can be sublimated is a harder question to answer; and it needs first a further consideration of the nature of sublimation.

Sublimation contrasted with substitution. Some years ago, investigations as to juvenile crime in London, Manchester, Liverpool, and Birmingham revealed the fact that it was greatest in those districts (not necessarily the poorest) where there were no public parks in which the young people could play. Now this might suggest that the desire for excitement or the impulse of assertiveness involved in criminal adventures was satisfied by games and sports; if so, then genuine sublimation took place — the same impulse and its energy were deflected on to a higher level. If, however, the juvenile crime was primarily due, say, to the desire for the things stolen, or for sex experience, and if the games in the parks merely served to divert the attention and occupy the time of the youths instead, it was merely the *substitution* of one kind of activity for another, and not the sublimation of the identical impulse. This may still be a very useful thing to bring about, for we must not overlook the truth in the old adage, 'Satan finds some mischief still for idle hands to do.' Obviously if a youth has nothing else interesting to do, he is more apt to occupy himself in undesirable ways. But to play football instead of breaking into a shop and stealing cigarettes is not an example of sublimation, because precisely the *same* impulse or tendency is not satisfied. Not

infrequently in educational discussions and writings, this word 'sublimation' is loosely applied to various kinds of 'substitutions'.

The distinction between sublimation and substitution is closely linked with the problem of nervous or mental energy. If there is a general fund of energy on which all innate tendencies draw, then a boy by collecting stamps may deflect energy he might otherwise spend in fighting others. But if (as McDougall and others would say) the pugnacious impulse has at least some specific private supply of energy of its own, this energy would not be expended in the collecting of stamps, and may only be stored to seek its outlet at another time.

Sublimation of sex. Now Freud and other psycho-analysts believe in the possibility of sublimating the energy of the sexual impulse, which is called the Libido. But we must recall Freud's wide use of the term sex, given above, including as it does all sensuous enjoyment. For Freud the appreciation of beautiful pictures is a type of sexual enjoyment in sublimation.

Without adopting this view of Freud's, we may agree that there may be identical elements in the enjoyment of beautiful pictures and a man's appreciation of the beauty of a woman; and to some extent the first may conceivably act as some palliation of the craving for the second, though I never heard it claimed that artists supply us with any evidence of this. We may also admit that constant occupation, either physical or mental, may make such a draw on energy (physical or mental or both) that sex cravings are likely to be lessened during the period of fatigue. Again, by such occupation, the occasions of the stimulation of sex impulses are likely to be less frequent; and finally, the sympathy and affection of an intimate friend of the same sex may lessen a man's craving for the intimate companionship of a woman. How far, however, the fundamental physical craving of sex, dependent as it is on glandular secretions, can be affected by such other activities and substitutes remains doubtful. Burt's view of human instincts may, I think, prove here very helpful: namely, (i) that there is a general factor in all instinctive emotional tendencies, so that all draw on some general fund of nervous energy; ii) that there

are group factors which correspond to the various instincts listed by Burt (much the same as McDougall's list), in which case we may presume that each particular instinct has its own special fund of energy. On such a view partial sublimation of any one instinctive tendency (A) may result from the substitution for it of the activities of another instinct (B), for they both draw on the general fund of energy; but the deflection of the specific energy of the particular instinct (A) would be much more doubtful.¹

Such a view would be consistent with Freud's own view that 'Sublimation can never discharge more than a certain proportion of the Libido'.² (By Libido, Freud means the energy of those instincts which have to do with all that may be comprised under the word 'love'.³)

It should be added that Freud regarded the advance of civilization and culture as due to the sublimation of the Libido. Broadly speaking, it does seem that cultural advance and sexual regulation roughly correspond; but it is difficult to prove that the regulations have not depended upon advancing ideals of culture, and not vice versa.⁴

Of course, our discussion of sublimation does not necessarily imply that every innate tendency *must* find expression; it may be, for example, that under certain conditions in a woman's home and in her immediate environment, her pugnacious tendency need never be aroused. Sex, however, has in it, like hunger, the appetite element, so that even without external stimulus there is an urge from within: and to a considerable extent imagination can supply the stimulus.

¹ For a fuller discussion of this problem, see J. C. FLUGEL, Articles on 'Sublimation' in *B.J.P.*, 1931, 12.

² *Introductory Lectures on Psycho-analysis*, 1922, p. 299.

³ *Group Psychology and the Analysis of the Ego*, included in *A General Selection from the Writings of Sigmund Freud*, edited by J. RUCKMAN (1937), see p. 204.

⁴ R. H. THOMAS, in his *General and Social Psychology*, p. 147, gives a useful summary of the most important work on this topic, viz., J. D. UNWIN'S *Sex Regulation in Man* in *Britisher* 1933 and *Sex and Culture* 1934. Thouless points out the danger of assuming that sex practices are identical with sex regulations.

CHAPTER XI

THE INFERIORITY COMPLEX AND SOME OTHER COMPLEXES AND NEUROSES

Self-assertion. Adler thought that Freud over-emphasized the importance of sex as a main source of neuroses. Adler himself stressed the supreme importance of the self-assertive impulse; indeed, he went so far as to suggest that some activities of sex and courtship are partly a form of self-assertion showing itself in that particular way, and possibly some people collect hearts like American Indians used to collect scalps. Certainly pride in the possession of a fine mate (or any mate at all) shows itself in the behaviour of many.

Adler maintained that every child's main aim and impulse is to dominate others. The self-assertive tendency and the craving for success do seem at least of more importance for school life in general than are problems of sex, which are primarily social problems, depending on such things as the deferring of the average marriage age, and complicated by economic problems. No doubt sex problems are also supremely important for most individuals; possibly the right choice of a mate is the main thing on which the happiness of the majority of men and women depends. Yet the problems of sex are not especially problems for the teacher apart from those touched on in the chapter on Sex and Sex Education. On the other hand, as we saw in Chapter VII, even in the mere child, self-assertiveness is a fundamental thing present at a very early age, long before sex develops; and if the self-assertive impulse does not get a certain amount of satisfaction, or if it is excessive, it may result in an unfortunate type of character. Self-assertiveness may conflict with fear of failure, or fear of punishment and of the disapproval of others; or it may be blocked by material circumstances. The youth may feel that he is up against his

environment and that he cannot get over the difficulties there may be before him.

Self-assertion backs up many other independent impulses of the child, which have to be checked and guided or even 'repressed'. One of the ablest exponents of the Freudian psychology in this country wrote, as follows, about children:

'Without social pressure the individual child would probably remain a selfish, jealous, impulsive, aggressive, dirty, immodest, cruel, egocentric and conceited animal, inconsiderate of the needs of others, and unmindful of the complicated social and ethical standards that go to make a civilized society.'¹

We may agree that all children show these traits to some extent, though the special characteristic of the young child is not mere selfishness, but impulsiveness. Quite young children may show unselfishness and sympathy, and reveal the protective impulse towards younger ones — brothers and sisters and others — in a charming, almost abandoned way, sometimes without counting the cost as they may do when older. However, I think we may admit that there are many impulses in the average child which have to be restrained by others, and then the self-assertive tendency is also challenged.

I have already called attention to the fact that this self-assertiveness is not entirely a bad thing. It may often need deflection into a better course supporting efforts towards more social and not merely selfish ends; but it is the basis of proper professional pride and of what McDougall terms 'the self-regarding sentiment'. It can be one constituent of a fine character.² Indeed, for the development of a normal balanced personality, some degree of satisfaction for this impulse of self-assertion seems essential. We have already seen how discouraged and hopeless children may become when work in

¹ See ERNEST JONES, *Papers on Psycho-Analysis*, 2nd edit., p. 124.

² That is, I think, no evidence that any of the inborn tendencies of man are essentially bad. When little children are cruel to animals I am inclined to think that it is primarily a form of self-assertiveness or a form of curiosity; or they may fail to recognize the pain they are causing. Anything beyond that is something abnormal, the result of wrong lines of development.

school seems beyond their powers. The proper selection of pupils for different types of schools and in grouping of children into A, B, and C 'streams' within a single school, have one main justification here; so has the extension of individual work within the class. To some extent success in the home and on the playing field may compensate for failure in the classroom. When, however, the child both fits in badly at home and fails in his school work, there may be either profound depression or revolt (according to the strength of the assertive impulse), or the development of an 'inferiority complex'. Let us consider the meaning of this often used term.

The inferiority complex. First of all, we must beware of the popular interpretation of the term, viz., that it is equivalent to excessive modesty and self-depreciation. That is quite a wrong use of the term. Excessive modesty may be due to a very strong self-submissive impulse and a weak self-assertive impulse. Some people like to remain in the background; they do not want to be prominent. A genuine inferiority complex implies a *repressed* idea of some real defect (or of some imagined weakness) which the person's strong self-assertiveness will not allow him to recognize.

An inferiority complex may arise from a genuine weakness — physical or mental; it may be encouraged by the excessive dominance of a parent, teacher, brother, etc., giving the child an idea as to his inferiority which may not actually be true. An inferiority complex does not reveal itself in the guise of modesty; on the contrary, the typical inferiority complex is apt to show itself in excessive assertiveness and outward boasting as a means of compensation. The individual wishes to appear superior. The underlying lack of confidence makes him put on an air of supreme self-confidence: it may make him more 'bossy'.

The particular matter in which the individual is inferior need not always be repressed from consciousness; as in examples given in the last chapter, it may merely be dissociated — not thought of as the cause of the extra assertiveness. The late Kaiser Wilhelm is, I think, a good example of this. He had a partly paralysed left arm, which weakness he did his utmost to

conceal: he felt the inferiority especially in military parades, of which he was extremely fond. He also felt that his English mother did not really love him. It is quite possible that his boastfulness and self-importance in various ways (he fancied himself as a musical composer, for example) were partly due to an effort to compensate for these weaknesses – though without his being aware of any such connexion. Some of Hitler's boastfulness and his assertiveness as a military strategist may have been partly due to the fact that he did not rise beyond the rank of corporal in the European war of 1914–18. The physical defects of the poet Pope have been regarded by some critics as partial causes of his bitter irony in dealing with some of his contemporaries.

We see then that an inferiority complex is not the same as a too critical judgement of one's own abilities or personality, nor is its existence proved by a modest deferential manner. The development of an inferiority complex probably depends on: (a) some deficiency (or imagined deficiency) in qualities that help in social adjustment and success; and (b) a strong self-assertive impulse that prevents the individual from reconciling himself to a position of inferiority: he cannot bear the thought of it.

The 'feeling' of inferiority. As we have just seen, the judgement that one is in some way inferior to others is not the same as an inferiority complex; nor is the feeling of inferiority, often due to a strong self-submissive tendency, the same thing as a genuine inferiority complex. This feeling of inferiority is very frequent and often it is irrational and groundless. Thus, in one inquiry made among nearly 300 University students it was found that well over half had suffered through a persistent feeling of inferiority in intelligence; though it is quite certain that University students are well above the average intelligence. The majority also felt inferior in social gifts. Only 8 per cent. of the men had never suffered from such feelings of inferiority, and fewer still of the women.¹ Of course, we tend to compare ourselves with those in our own circle and not with some vague 'average man'. Yet many of these judgements of

¹ See G. W. Allport, *Personality: a psychological interpretation*, p. 174.

inferiority are unjustified. Confidential reports made to me by students as to their adolescence have shown that some students of great intellectual ability and excellent social gifts may, during the period of adolescence especially, suffer from strong feelings of inferiority.

So to the man who feels inferior it may be some comfort to know that probably most of those around him are feeling or have felt much the same. He may take further comfort in the reflection that so many valuable elements of character are under his own control; for even those who are not clever or socially gifted or physically attractive can, if they will, be conscientious, trustworthy, and considerate, and these are qualities which will help even more in the long run to happy social relations with others.

Excessive self-assertiveness. We have seen that extreme boasting and assertiveness may be the signs of repressed ideas and feelings of inferiority; but we cannot assume this is always the case, for the boaster and bully may happen to be innately endowed with a very strong self-assertive impulse, enough to account for his behaviour. This difficulty of diagnosis makes it harder to decide the best treatment, and we come here to a complicated problem, yet one that is very important for discipline.

It is often stated that if a pupil is constantly showing off and trying to be prominent in school the teacher should sublimate this assertiveness by making him a monitor, giving him opportunities to be a leader, and so on. Now if the excessive assertiveness is really due to an inferiority complex, anything which lessens the causes of a feeling of inferiority may be expected eventually to lessen the extra assertiveness due to it; and when dealing with very assertive adolescents, in whom there are obvious grounds for the setting up of an inferiority complex, I should be inclined to suggest to the youth in a friendly talk the connexion between his extreme assertiveness and the repressed feeling of inferiority, trying, at the same time, to reassure him about any disabilities; and to point out possible compensations and the lines along which he could be a success if he tried.

Where, however, there is no inferiority complex, boasting

and bossiness is probably due to an excessive innate assertiveness. Now we have seen that some satisfaction for the self-assertive impulse is legitimate and, indeed, essential; but where the impulse is excessively strong, some checking is likely to be necessary if it cannot be deflected into channels socially desirable. Merely to provide the assertive boy with more and more uncontrolled opportunities for managing others may only strengthen the tendency through the pleasure of success and the enjoyment of power.

Diagnosis as to whether there is an inferiority complex or only an excessive innate impulse of self-assertion is difficult. In some cases the teacher or leader will know of certain deficiencies and weaknesses in the youth; and a preference for associating with younger boys is sometimes a sign of an inferiority complex. One can only advise the teacher to study the individual, to proceed cautiously, and to watch carefully the effects of his treatment. Difficult cases may need examination by a skilled psychologist and a study of home conditions.

The 'parent' or 'father' complex. I have said above that an inferiority complex may be encouraged by the excessive dominance of a parent or teacher, or by chagrin at the obvious superiority of a brother or sister, or others. The stern discipline of a parent and the perpetual supervision and control which gives no freedom for independent choice or action, even for the adolescent, seem to have different results on different individuals. Some – those of strong innate assertive tendencies – eventually revolt and break away from the excessive dominance; though I have known personally some young people who were clearly strongly self-assertive by nature, but who remained till early manhood and womanhood largely under the dominance of rigid parental ideas.

In others, with less assertiveness and with strong impulses to self-submission, a feeling of great inferiority to, and dependence on, the parent may continue well into adulthood. Psycho-analytic literature affords many examples of long-continued and excessive submission to and dependence on a parent, and a tendency when faced with difficult circumstances to revert (or 'regress') to the childish attitude. The fact

that the reason for this regression is not realized by the individual (or indeed that it is a regression to, or fixation in, a childish attitude) justifies the use of the term 'complex'. One of my patients, a young man of nearly thirty, consulted me because an absence from home of several years had begun to make him realize this excessive dominance and had given him a desire to shake it off. His father had dissuaded him from choosing the occupation he wanted; he had also enjoined on him the importance of avoiding the society of all women. Now the young man wanted to get engaged, and to choose a different job, yet still felt the dominating influence of the father and finally yielded to it against my advice. Another young man of about twenty-six told me he could not make decisions, even of no great importance, without consulting his father. Jung reports the case of a young wife who was so under the influence of her father that she expected even her husband to submit to all his wishes.¹ In war-time, cases have been reported in which a young officer was happy and efficient under the command of one for whom he had great respect and affection, but became too dependent on him and had a mental collapse when removed from him.²

When this feeling of inferiority and dependence is felt merely towards a parent and does not constitute a general 'inferiority complex', it is convenient to label it the 'parent complex'. If it is due largely to excessive dominance and discipline of a parent it has been called the 'father complex'. So far as it depends on stern discipline, this seems appropriate, as the father is probably most frequently the more *severe* disciplinarian of the two parents though not the one who exercises discipline most frequently, especially during early childhood. Thus, in a class of University graduates I found by an anonymous questionnaire, that of the forty-five men, twenty-seven reported that the father had been the more severe disciplinarian. Of the thirty-two women, only seven reported that the father had been the more severe disciplinarian. In a later inquiry, also

¹ See his *Collected Papers on Analytical Psychology*, London (1916), Chapter III.

² See *The Neuroses in War*, edited by E. MILLER (1940), p. 115.

among University graduates (thirty-three men and thirty-two women), I asked them to distinguish between the more *severe* and the more *constant* (i.e., frequent) disciplinarian, and to refer separately to different periods of childhood and adolescence. The mother was reported to be the more constant disciplinarian for the ages up to fifteen for boys and twenty for girls; but the father was much more frequently the more severe disciplinarian for all ages for the boys and more frequently even for girls after the age of five.

Jung has especially stressed the importance of the relation of the child to the parents as the main cause of neuroses in young children.¹ But a complex resulting from such dominance of the father and the repression of self-assertion may also be the source of irrational behaviour and abnormal emotional responses later in life; as, for example, when a man is specially resentful of any authority exercised over him by another in the ordinary affairs of life. In one case that came under my notice, a man experienced, in circumstances in which a slight conflict threatened between himself and others (as, for example, in business affairs), a feeling of anxiety like that of an accusing conscience, even when the strictest examination showed not the slightest grounds for it. This subject showed the influence of the father complex most clearly in the word-association test; several long reactions, which he found it impossible to explain, led back suddenly to the fear of the father, especially in reference to certain events in which the youth had been quite innocent. The fear of the father at this period had not been entirely forgotten, but so far as he knew, it had not been thought of for many years. I may add that this discovery was made before I had heard of, or read of, the theory as to the father complex, so that suggestion on my part seems to be ruled out. Within a few weeks of this discovery anxieties of the kind mentioned ceased to trouble the man.

The 'mother complex'. We have seen that even a young man or woman may continue to be excessively dependent on a parent's guidance or control. Such continued dominance need not be due to severe discipline: it may rather be due to excessive

¹ See *Contributions to Analytical Psychology* (London, 1928), p. 333.

solicitude and petting, and it is then sometimes labelled a 'mother complex'.¹ Most of us are familiar with the type of mother who dotes on her child and thinks him to be superior to all others and sometimes tells him so. She indulges his every wish (unless it may endanger her own hold on him), shows anxiety about his every slight ache or pain; sides with him, without questioning, if he has been in trouble about his school work or with other boys. If others will not welcome him as a companion he can always fly to his mother for reassurance and devotion. This is legitimate for the mere infant; but if long continued, the growing child may become too dependent on the mother and fail to make the effort necessary to set up satisfactory social relations with others. He (or she) becomes 'fixed' on the mother, content with her adoration, when others fail to appreciate him.

It has been maintained that such a 'mother complex' is usually responsible for a man's extreme sensitiveness even to mild criticisms, though here again it is hard to decide whether this may not be due to his strong self-assertion and pride. One psycho-analyst has said that when the neurotic complains that the world does not understand him, he is really crying for his mother. Another (Janet) finds among neurotics a specially strong craving for someone who understands them,² though no doubt we all of us like to be 'understood' – partially at least, with a little idealizing as to our weaker points. Janet adds that such neurotics have only a very hazy idea of what they mean by 'being understood', and that he often felt far from understanding them even when he was able to give some help through his sympathy and guidance. The desire to be 'loved for one's self alone' seems also to be a regression to a childish attitude, for it is only the parent's love of the infant that is so completely selfless. Beyond early childhood, however, it is undesirable that such completely one-sided relationships should hold: and, indeed, McDougall asserts that a change of attitude is 'a perfectly natural consequence of the fact that, as

¹ See *Functional Nervous Disease*, edited by H. CRICHTON MILLER (1920) Chapter 8.

² See P. JANET, *Psychological Healing*, Vol. II, p. 1125.

the child grows up, he gradually loses those qualities which appeal directly to the parental instinct'.¹ After that stage, affection should depend more on the qualities the young man or woman actually reveals. Similarly, it is a mistake for parents to seek to force the continued devotion of one grown-up brother or sister to one another when there is little that appeals to them, though the sharing of childhood's experience, and an affection or the same parents and for the home itself, do usually provide a strong bond.

Unconscious appeals for sympathy or protection: some 'defence mechanisms'. In the last section we dealt with that exaggerated demand for sympathy or admiration which may be due, quite unconsciously, to the earlier unwise handling by the parent. The bringing of this to light, and the realization by the patient of the source of his peculiar sensitiveness, may produce a considerable change, if he is really co-operative in the process of re-education by the psychologist.

An extension of our study of such unconscious causes of excessive demands for sympathy or protection would lead us to a variety of minor mental disorders. A book on general psychology cannot attempt to deal with all these or with any of them thoroughly; yet one or two are so common, and may so affect even a child's behaviour, that we may just glance at them.² One of the most frequent is illustrated by the following record.

'George D., a boy of ten at a well-known preparatory school, was almost invariably "seized with a heart attack" during the first night of each new term. On the last day of the vacation, his mother would see him off on the railway platform; say farewell after many ardent embraces; and George, surrounded by a batch of schoolfellows travelling down by the same train, would forget his grief and filial affection, and laugh and joke for the rest of the journey. At night, while other home-sick youngsters were sobbing on their pillows,

¹ *Outline of Psychology*, p. 139.

² I have dealt with a variety of minor 'nervous' troubles, and possible unconscious influences in children and mothers, in *Parents and Children* (Methuen, 1953).

George would wake up panting and clutching at his chest. The school doctor reported that the boy was in perfect physical health; and the headmaster himself rightly diagnosed the trouble as "an excess of maternal tenderness". A little advice to the parents, which he passed on, and they were sensible enough to accept, remedied the situation.¹

Now we must not assume that this was a case of deliberate pretence: rather that by a mysterious unconscious process, symptoms were produced which would seem to demand the return home and the renewed care and protection of the parents. Such 'protective mechanisms' are not uncommon among soldiers in war-time. A wounded man, cured of his wound, may develop a paralysed arm which prevents his return to the front. He may be most conscientious and sincerely express a strong desire to be fit again to return to active duties. Sometimes the cure of the paralysis of the arm (by suggestion or by electrical stimulation showing the man that he can move it) only results in the appearance of some other bodily symptom equally disabling. Such symptoms are termed 'hysterical' – a very different usage, be it noted, from the popular one in the sense of excessively emotional.

Such hysterical symptoms seem to occur in all degrees of seriousness. Thus a girl may develop a severe headache or sickness (really felt, not pretended) before an examination she wishes to escape; or a person may continue to feel ill after he is quite cured, unconsciously desiring the rest from hated work or the unusual attention he gets from wife or mother. It is a kind of extreme case of the instinctive appeal for help and sympathy which we saw is made by tears and other expressions of distress (p. 77).

¹ See C. BURR, *The Subnormal Mind*, p. 244.

CHAPTER XII

TEMPERAMENT AND THE CO-ORDINATION OF INNATE TENDENCIES

Conscious and unconscious motives. In the last two chapters we have seen how profoundly unconscious motives and complexes may influence our thoughts and actions; and in earlier chapters we saw that fundamental innate tendencies may be at work within us even when they are so overlaid by the results of experience and so developed into habits that we are unaware of their basic origins. We must admit then that we may often be mistaken in judging our own motives, and that we often tend to 'rationalize' them, that is, try to find good reasons for doing what we do because of unconscious or at least obscured motives. Nevertheless, in the end we can only deal with our own or other people's motives through the medium of conscious analysis and thought. This is indeed recognized by the strongest adherents of psycho-analysis itself. Thus, one who was probably the best qualified exponent of psycho-analysis in this country, wrote as follows: 'The psycho-analyst must eventually content himself with seeing that the field is as far as possible clear for the full unhampered operation of the conscious force.'¹

In this chapter on the co-ordination of innate tendencies we shall return to a discussion of motive forces chiefly on a conscious level.

The unification of innate tendencies. In none of us is this internal harmony and unification complete. Some seem to come near to it because they are apparently the happy inheritors of well-balanced innate impulses, with their strengths well adapted to the social ideals of modern civilization – impulses still further

¹ J. C. FLUGEL, *Man, Morals, and Society* (London, 1945), p. 33.

brought into harmony by fortunate environmental influences. For example, some persons reveal even in childhood strong sympathetic and protective tendencies and only moderate self-assertiveness. They are slow to anger yet are not so excessively submissive as to be dominated unduly by others. As adults they are lovers of the society of others without being unhappy when alone. They have moderate sex impulses, or if strong ones, they are fortunate in the choice of a mate precisely adapted to them; and so on.

Such individuals seem to achieve a lovable disposition and a fine balanced character without much conflict or effort, and sometimes even without any dominating ideal of duty or service. They are the type that Wordsworth apparently had in mind in his 'Ode to Duty':

'There are who ask not if thine eye
Be on them; who, in love and truth,
Where no misgiving is, rely
Upon the genial sense of youth:
Glad Hearts! without reproach or blot;
Who do thy work, and know it not.'

Such, alas, are probably few. Far more find themselves with certain strong impulses conflicting with others, and especially conflicting with the demands of the society in which they live. Some tendencies need checking if others are to be even partially satisfied; they need co-ordinating in that way which is most satisfying for the sake of the individual's own peace and for gaining the approval of others, which is usually so great a factor in his own deepest and most lasting satisfaction.

This problem of unifying man's impulses and especially of reconciling his strongest desires with the demands of a wide society, has appeared in different forms at various stages of history. To philosophers of ancient Greece, it appeared chiefly as a conflict between man's reason and his appetites; to St Paul as a conflict between the flesh and the spirit. To various religious teachers, it has taken the form of bringing all things into subjection to what was regarded as the will of God, or to the law of love. In more recent times moral philosophers have

sought to state general principles or ideals which ought to control men's actions.

It is not the business of psychologists as such to discuss the validity of these various expressions of the ideal of conduct; but it is our business to consider how such processes as the integration or control of disconnected impulses may come about, and especially how some reconciliation of individual desires and the legitimate demands of society can be secured.

The grouping of tendencies and emotions. We have seen that we cannot rely on nature to co-ordinate all our inborn impulses conveniently to suit both our own wishes and the demands of the community around us. Before considering how these two can be co-ordinated we may ask first whether there is any innate grouping of these innate tendencies and emotions. The best evidence so far on this is afforded by Burt's inquiry, to which I have already briefly referred (p. 132). By getting reports (made by teachers) of the behaviour of children, and reports of fellow-students living together (made by one another) Burt was able to obtain estimates of the intensity of various impulses and emotions of the kind we have discussed, and, in addition, of other emotions, including joy and sorrow. On the basis of these estimates he obtained correlations between the various instinctive tendencies and emotions, and formulated the following conclusions:

(1) There is a *general factor of emotionality*. Just as in the case of intellectual processes there is a general factor which enters into all such processes, though to a different degree, so Burt finds a general factor in all types of emotions. Thus some persons are very emotional *in general*, others only slightly emotional.

(2) Burt also found *two groups of emotions and impulses*, those within each group being more closely linked together: (a) a strong (or sthenic) group including assertiveness, pugnacity and anger, sex, and curiosity; (b) a weak, inhibitive (or asthenic) group, including self-submission, the tender emotion, fear, sorrow, and disgust.

This means that an individual who shows one of the traits under (a) to a strong degree, is likely also to show the others of

that group to a relatively high degree, at least as compared with the strength of his tendencies under (b); while the tendencies under (b) tend to be weak if those under (a) are strong, and vice versa.

(3) Finally Burt finds *specific factors* for each independent tendency or emotion. In other words, within the group (a) in spite of the tendency for the traits of the group to resemble one another in strength, a man may reveal a fairly high specific tendency towards anger and pugnacity even when the other traits in that list are relatively weak.

One other comparison with our study of general intelligence may be useful. We saw in Chapter III that a boy may be very low in general intelligence (so that he is almost a mental defective) and yet may have a high degree of specific ability for dealing in a mechanical way with numbers so that we may find a mental defective who is a 'lightning calculator'. Similarly, if the general emotional factor is weak in a particular individual and certain specific elements strong it may appear that the various emotions or instinctive tendencies seem to be almost entirely unrelated in him and that their strengths are quite independent of one another.¹

These findings, however, though very important, still leave us ignorant as to what is an 'average' individual. Furthermore, Burt's inquiries dealt with reports by observers, and therefore should perhaps be strictly regarded as referring primarily to the *expression* of emotions and tendencies, as he himself hints in one place. Some people repress the expression of their emotions much more than do others, as we have seen. However, this does not apply so much to children, and Burt's inquiries included a large number of children as well as a group of adults.

In any case there is no suggestion by Burt or others that the usual distribution of innate tendencies in a man is of such a

¹ BURT has given an account of his enquiries in the following: the journal *Character and Personality*, 1919, 3, Nos. 3 and 4. *The Subnormal Mind*, Chapter I. Details of the correlations found between the various tendencies are given in the report of his paper read before the British Association, in their Annual Report for 1920, p. 104. Burt reported further evidence of his findings after the study of children referred to him for criminal or nervous tendencies. See *Brit. Jour. of Mental Psych.*, 1938, 17.

nature as to make easy the co-ordination of one impulse with another, or to make easy the adaptation of the individual's desires and impulses to the demands of society. Indeed, on the basis of Burt's findings it might be suggested that nature has weighted the scales rather against easy adaptation to the demands of modern civilization.¹ Thus, if as Burt found, strong assertiveness tends to accompany strong sex tendencies, that is likely to make social adaptation harder than if strong assertiveness were normally accompanied by weak sex tendencies but strong sympathetic-protective impulses.²

The factor of general emotionality and the usual grouping of instinctive tendencies does not then help towards the *desirable* co-ordination of tendencies. The classification is useful, as I have just indicated, chiefly in helping us to recognize extreme types, especially when dealing with difficult children or neurotic adults. Burt points out that the young delinquent often reveals in a high degree the strong (sthenic) emotions and impulses – assertiveness, pugnacity, sex, and acquisitiveness; while an excessive predominance of the other weak (asthenic) group of tendencies and emotions – fear, submissiveness, disgust, tenderness – is often found in the excessively 'nervous' or inhibited child and neurotic adult.

Types of temperament. Again we are not helped much in our problem of the co-ordination of innate tendencies by earlier suggestions as to the main types of temperament, though some of the suggested types do fit a few extreme cases. The familiar types suggested by Galen correspond roughly, Burt remarks, to his own scheme.³ The 'phlegmatic' type corresponds to the unemotional or 'apathetic' – lacking in general emotionality. The 'sanguine' type corresponds to the unstable; the 'melancholic' to the inhibited or repressed, and the 'choleric' to the

¹ In a letter to me Burt suggests the 'sthenic' and 'asthenic' grouping may have been useful in very primitive forms of society.

² Incidentally, we must bear in mind that the tendencies and emotions Burt dealt with would have already been considerably modified by experience and social training. The fact that even so the grouping does not give us a socially useful classification makes the results all the more significant for our present problems of education.

³ See BURT'S *Normal Mind*, p. 52.

unrepressed. But this still leaves the mixed type, to which, as Burt points out, the majority belong; and even within each type itself much will depend on the particular emotion and impulse which has the greatest *specific* energy.

A now widely accepted classification of temperaments is that of the *Extraverts and Introverts*, first so named by Jung.¹ The Extravert's attention and interest are turned mainly outwards – to persons and things in the world around. The Introvert's interest is directed inwards: 'there is "exaltation"', Jung says, 'of the individual himself.' 'The "typical extravert"', Burt remarks, 'is aggressive, unrestrained: the typical introvert is inwardly sensitive but "outwardly quiet", engrossed in fantasy, self-controlled, self-centred, self-absorbed.'² So there is, he thinks, a connexion between the extravert type and his strong sthenic group of emotions, and between asthenic and introvert types. McDougall accepts the terms 'extravert' and 'introvert' and regards the essential thing about the introvert as the 'excess of those [brain] activities of the highest level on which self-conscious reflection and control of lower level processes depend so largely; while the essential mark of the extravert is the ready passing over of the affective urge into action and expression without the modification and control of it by cerebral processes of the highest levels'.³ 'The taking of alcohol,' adds McDougall, 'by removing these higher inhibitions, readily turns the introvert into an extravert.'

Jung himself, however, admits that these types apply only to a minority of people, most belonging to a mixed type. In any case they do not help our problem of desirably co-ordinated tendencies in a way suitable for a life which is to be happy individually and socially approved. For McDougall is surely right in rejecting the view that the inexpressive, introvert type is essentially egoistic. The introvert's preoccupation with his own mental process may *seem* to make him egoistic and to lessen the spontaneous vigour of his altruistic impulses: but, on the other

¹ *Analytical Psychology*, Chapter XI, and in *Contributions to Analytical Psychology*, the paper on 'Psychological Types'.

² *The Subnormal Mind*, p. 48.

³ *Outline of Abnormal Psychology*, p. 446.

hand, it is equally likely to check impulsive actions and the expression of feelings which may be harmful or displeasing to others.

The co-ordination of tendencies by the self or by social training. We see then that an examination of the types of temperament and the natural way in which the various innate tendencies and emotions are distributed – both *among* individuals and *within* individuals – does not help us much in the problem of co-ordinating tendencies; in bringing about either individual self-integration or social adaptation. As suggested earlier, in a few persons an ideal balance of tendencies, individual and social, may possibly exist innately; but we cannot be sure even of these cases, for all adults have passed through some social training at the hands of parents and others. Anyhow, for the vast majority, possibly for all, it is only too clear that – even if Dr Ernest Jones' description of the child (given on p. 135) is somewhat exaggerated, the 'natural man' needs for his own sake and that of others, to have his innate tendencies co-ordinated and modified.

Sometimes this is done by a man himself with no thought of others: as when he resists the impulse to have another glass of beer in order to have enough cash left to go to the pictures. But social adaptation also requires that some of his tendencies shall be checked or diverted, some encouraged and stimulated. Such co-ordination and modification of the innate tendencies involves all the business of the training of behaviour, discipline in home and school, the development of sentiments and of ideals of character, and so on. We shall discuss these more fully in the next chapter and in later sections on discipline. Here we will only briefly indicate how the inborn tendencies are usually checked and modified – without for the moment dwelling on the rightness or wrongness of the procedure. Much of what we say here may appear familiar everyday knowledge and common sense, but that needs to be critically examined and finally systematized.

Alternating and conflicting tendencies. In early childhood simple conflict between two impulses may often appear, just as it does in animals. I have often entertained myself by standing at the

gate of a field in which were young bullocks, and imitating the lowing of a cow. The bullocks would slowly approach, apparently curious at this unusual combination of voice and appearance, yet as one approached near he would often start backwards nervously, then advance again, and so on. The conflict of fear and curiosity was apparent.

Until some definite habits and, later, plans of consistent action are formed, a child often thus betrays the play of conflicting or alternating impulses; even some adults seem to be dominated entirely by one impulse at one time and by another at another time. Thus at one moment everything else gives way to a man's imperious desire for food and drink; consideration for others goes, even for the — at other times — much loved mate. Then courting and sex may sweep all before them. At another time, when balked in some strong desire, a man's self-assertion and anger become supreme, and consideration for his own and his family's real welfare are forgotten in the pig-headed determination not to be beaten. Persons who are specially apt to be thus swayed momentarily by some strong individual tendency and emotion belong to the unstable type.

The checking of one tendency by another. Some checking of one tendency which is too predominant at a given moment may be effected by another tendency if this latter tendency is not quite overwhelmed; for example, sympathy and the protective tendency may check the violence of a man in anger against a child or wife. But for this to take place most effectively, some reflection on possible consequences is necessary. Then the man can compare in imagination the results of yielding to impulse A with those of yielding to B. The thought of his wife's distress (or the fear of a 'row') may check his inclination to have another drink and go home half tipsy. This reflection on consequences is one way in which one tendency may check another and tend to bring about some degree of unity — even if the individual is at the time uninfluenced by thoughts of the *approval* or disapproval of others. Thus there is an *internal* mutual checking of one another by the innate tendencies, or partially acquired drives, as well as their checking by external influences of penalties or rewards.

The social checking or encouraging of crude impulses. The young child soon learns to avoid doing certain things – such as touching a hot poker which causes immediate pain. Similarly, those actions which are regularly stopped by the mother and, if necessary, punished come to be avoided, at least in her presence.¹ This is mechanical training at a low level, not unlike the ‘conditioning’ of a reflex, and it occurs chiefly in early childhood, though it appears later in the checking of a youth’s behaviour by his gang and others. Actions of the child approved by the parent, on the other hand, if praised or rewarded, will tend to be repeated, the effect of the praise being largely dependent on the child’s affection for (or fear of) the parent. Here we come to something beyond mechanical checking: we find conduct influenced by the desire to please; by the pleasure gained from the praise of others and by the fear of their disapproval. This involves looking beyond the immediate moment to later consequences.

The control of impulses by thoughts of future consequences. This capacity to look ahead, and to think of the consequences of yielding to an impulse, is perhaps the main factor in the early stages of the co-ordination of tendencies and in the building up of a unified character. In the little child of a few years old this capacity is weak – he tends to live in the immediate present; the thought of the future consequences of an action is apt to be faint and fleeting, even when experience has shown him what it may be.

Consequently with very young children, the best way to check an undesirable impulse is by an *immediate* appeal to another tendency which will check the first. To a young child of two or three the offer of one visible sweet at once is likely to make a stronger appeal than the promise of three or four sweets tomorrow; and an immediate penalty will usually be more effective than one twice as severe but postponed to the end of the week.

¹ Some psychologists, especially the psycho-analysts, maintain that this early approval or disapproval of the parent is the foundation of the ‘super-ego’ and conscience. We may agree that it is at least the fundamental factor in the building up in childhood of what is called ‘conscience.’

As we saw in an earlier chapter, one thing which distinguishes man's instinctive tendencies from those of animals is the way in which such tendencies come to be roused merely by the *thought* of the objects which normally stimulate them. This enables the man eventually to control a strong present impulse by the thought of appeals to other rival impulses. But for its full effect this needs maturity and experience of the specific type concerned. 'A burnt child dreads a fire, but it is none the safer from drowning because of that.'¹ The optimistic tendency of some people to go out of doors without mackintosh or umbrella because in spite of threatening clouds it is not raining at the moment will in time be checked by repeated soakings; but we have no reason to suppose that such learning by experience will make the individual more disposed to look ahead in, say gardening, and be more willing to put in some extra hours heavy digging in the spring for the sake of better sweet peas in the summer. To assume that the results of experience with the rain would so 'spread' would be to fall into a similar error to the doctrine of 'formal training' which we discussed in reference to the training of observation, imagination, etc., in Chapter II. Unfortunately the fallacy is a common one in discussions about establishing good habits and the training of character.

The influence of experience, then, in the checking and guiding of impulses is probably largely specific. There seems, however, to be an important general factor or factors in this capacity to look ahead and to be influenced by the thoughts of future consequences. It forms an essential element in true volitional action and in the building up of a co-ordinated and permanent character. It is not to be regarded, however, as necessarily leading to social adaptation. A burglar may show it when he resists the temptation to enjoy a good meal discovered in a house he has broken into, by bearing in mind the danger of unpleasant consequences if he remains too long in the house. Social adaptation is on the way only when the individual considers what others will think or feel about his action.

The influence on tendencies of the thought of the disapproval or

¹ JAMES WARD, *Psychology applied to Education*, p. 119.

approval) of others. This is, of course, the most important aspect of the social development of the individual. It is something more than the mechanical 'conditioning' (repressing or encouraging) of a given act by the punishment or reward which immediately followed it; and it is something more than the capacity to look ahead and to reflect on consequences, for that as we have seen may go with a man's self-centred consideration as to which of two actions will bring him more pleasure.

The new element we are now considering is the caring whether others will approve or disapprove. It may still be ultimately dependent on a selfish consideration — the fear of punishment or the hope of reward, or the desire to gratify the self-assertive tendency by the thought of others' approval and admiration; but it may also be dependent on unselfish considerations, say, on the wish to cause pleasure to a loved one by acting in a certain way. In a wider form it appears as a concern about the judgement of a group of persons — the boy's gang, the man's club or church, and so on. Finally, in its most complex form it takes the shape of a sensitive regard for the judgement of 'society' or of public opinion, and its effect on what the man would consequently tend to think about himself if, for example, he did a mean action, as contrasted with what he would like to think about himself.

When these wider considerations are brought into view the choice between two alternative actions becomes a very complicated one; sometimes the ideal of the self and what McDougall calls 'the self-regarding sentiment' may be brought into what is popularly called the 'act of will': what psychologists would label 'volitional decision and action'. The great majority of the actions of everyday life do not, of course, require such wide considerations; and many actions that would be socially the better for wider consideration are determined by those habits of feeling (with their consequent actions) which psychologists call 'sentiments'. A further study of these and of the nature of volitional choice will appear in the next chapter and in volitional choice and the self-regarding sentiment we shall find 'ego-involvement' in its fullest degree.

CHAPTER XIII

SENTIMENTS, VOLITION, CHARACTER, AND MORAL HABITS

The nature of sentiments. As we have already seen (p. 50), a sentiment is a more or less permanent and organized system of emotional tendencies and impulses centred about some object or person. Examples of sentiments are the following: a man's love for his wife or child, his respect and affection for a friend, his devotion to a church or a political party, his patriotism. Such sentiments are supremely important: for, in adults at least, a sentiment seems more frequently the determinant of action than is any one individual instinctive impulse of the moment — important as those are as fundamental constituents of sentiments. Let us consider the nature of sentiments more fully.¹

As we have already indicated, a child who has several times been bullied by another comes to have a permanent tendency to fear the bully. Some would call this a simple sentiment; only one emotion and tendency being involved. At least the child is on the way to forming a sentiment. For very soon he reaches a stage at which he hates the bully, and not only fears him when he approaches, but rejoices when he sees him beaten by others and so on. Here the sentiment of hatred is more complex than the mere permanent disposition to fear. So with the mother's *sentiment of love* for her babe: she feels joyful when it is healthy and happy, sorrowful when it is ill or in pain; she is active in trying to relieve it; angry if anyone injures it, and so on. All these tendencies are linked by being directed

¹ Some writers on psychology 'especially American writers' would use the term 'attitude' where we here use the term 'sentiment'. But it would seem better to use the word 'attitude' as a wider term including some mental attitudes which cannot be regarded as sentiments.

towards the child. They spring naturally from the very nature of the parental or protective impulse and its accompanying tender emotion, but they become stronger as, through their satisfaction and the enjoyment produced by the child's responses, the mother's main interests come to derive from this sentiment.

The sentiment of respect. More dependent on experience is the building up of a boy's sentiment of respect for his teacher. At first his attitude is neutral, though, if a new boy, he may be slightly afraid. Then the friendly manner of the master dispels the fear; yet as the master's personality and discipline dominates the class, the boy's submissive impulse is called forth; then the master's rich fund of knowledge about interesting things creates some feeling of wonder and admiration; or the boy learns that the master has passed bravely through hard fighting in the War; and he finds the master just in his dealings with himself and other boys. Thus is built up gradually a sentiment of respect and admiration and an attitude of submission which will dominate all the boy's behaviour towards that master. Revolt against him will only occur under the stress of some strong emotion of, say, anger against another boy, or if a situation arises in which the boy's pride is too sorely tried, or in which a specially loved friend can only be served by rebellion against the master's rules. Normally, the boy's behaviour and volitional actions where this master's authority is concerned are determined by this dominant sentiment rather than by the varying strength of momentary impulses.

In the development of this sentiment of respect for the master and in the case of the mother's love for her child, we have examples of a certain kind of co-ordination of impulses. Such dominant sentiments do introduce some unity into conduct; but it is apt to be limited in scope. Thus the effects of this boy's sentiment of respect for the master may be confined to the boy's relations with that particular master. With another master he may be disobedient and disrespectful. So far as there is a 'habit' of obedience, it is a specific one; and to assume that the boy in question is necessarily acquiring a 'habit of obedience' or 'respect for authority' is to fall into the error against which we

warned the reader in the paragraph on habit in Chapter II, p. 29.

We must admit, however, that in some ways it is possible for a sentiment of respect (or dislike) for a master to affect the approach to other new masters. It may, for example, give rise to a vague idea that all masters are like that: so that the boy is prejudiced one way or the other from the start. Experience with new individuals, however, is likely to modify this, so that the spread or transfer of effects is apt to be unstable. There are some examples of such spreading of a sentiment in which the effect seems permanent and very marked, as when a girl, deceived by a faithless lover, says she is 'finished with men' and that 'they are a bad lot'. Such cases, however, we may regard not only as irrational but as somewhat pathological, if such effects are really permanent.

In the case of the boy and master, if the effect of the first master's influence is to be permanent and widespread throughout the boy's conduct, it must be through the master's leading the boy to adopt general principles and ideals of conduct which will govern his behaviour in the classes of other masters and in the playground, and in the outside world. If the boy's respect and admiration for the master is great enough, he may one day, when tempted to do a mean thing, find himself thinking of that master and reflecting, 'He would not like that', and so checking himself. Here we should have the beginnings of control of action by an ideal.

The sentiment of respect for the master, as we said, is for an individual: the boy may also have a somewhat similar sentiment of respect for the leader of a gang of young toughs with whom he associates. The leader calls forth the boy's submissiveness by his physical strength and assertiveness; the boy's admiration is roused by the leader's courage, skill in boxing, and so on. But the principles of conduct adopted by the gang leader may be very different from those suggested by the respected master. So the two sentiments in the boy may conflict.

Sentiments and the co-ordination of tendencies. We see, then, that the building up of sentiments by itself does not solve the problem of unitisation and co-ordination of tendencies. All depends

on what kind of things or persons or institutions (gang, home, club, church, etc.) the sentiments are built round, and on which are the dominant or master sentiments.

The *sentiment of friendship*, for example, may be a great force in a youth's life. It may be very complex, beginning from the social or gregarious impulse simply to be with someone: then the pleasure of various games and interests are intensified by being shared; troubles are lessened by the friend's sympathy, new interests are started through his example, gratitude is roused by some kind acts of his, and so on, until there are many bonds between the two and real affection grows up, which enhances the apparent qualities of the friend and closes the boy's eyes to his weaknesses. But here again the effect of all this on the actions and character of the youth will depend on the nature of the friend to whom he becomes so attached.

Sentiments may also be developed about *groups* of people and institutions. We have only to think of the love of the home and its many elements: or of the sentiment which may be eventually built up round the idea of the school, involving loyalty, gratitude, and affection, which may last many years after a boy has left the school; or of the devotion of a man to a church, or to a political party, or to his regiment, or to his country. A man's whole self may thus include a number of sentiments; and conflicts when they come are not so much conflicts between momentary specific impulses, but rather between one sentiment and another – between demands of home and of country, etc. These various sentiments – friendship, loyalty, and so on – must not be regarded as purely altruistic, or as in themselves solving the problem of the reconciling of the demands of the self and the claims of society. Yet they may go some way towards it. For a man's interests, and his greatest satisfaction, may come to be found in, say, the service of his church or political party, or of the school in which he is a master; and in them he may find both satisfaction for his self-assertion through the pride of office, or through enjoyment of his skill as a teacher or speaker; and to some extent he 'identifies himself', as the popular but vague term puts it, with the institutions – the success of his political party is to some extent *his* success. Thus

some even of the great sentiments are blended with the sentiment of self-regard, and even 'egoistic' tendencies may impel a man to strive for the welfare of the group to which he belongs. 'This is the most important of all truths,' McDougall adds, 'for social psychology.'¹ Hence a valuable part of early social training is to get a youth to be interested in – to find some personal gratification in – groups or societies which are working for a good social end.

Even, however, when various sentiments are well established, we are still left with the possibility of conflict between them, between friendship and professional claims, between home and country, and so on. It would seem we need some general ideal or some master sentiment – and some leading psychologists find this in the sentiment of the ideal self.

The sentiment of self-regard and the ideal of the self. It may seem strange at first that a 'sentiment' may be built up towards the self or the idea of the self. But popular speech already uses the terms 'self-respect', 'self-love', and 'self-depreciation';² and 'Self-respect,' says McDougall, 'is the proper description of the self-regarding sentiment when the two main tendencies of the sentiment, the impulses of self-assertion and submission are duly balanced.'

'When [McDougall continues] the self-assertive tendency is unduly preponderant and takes the relatively passive form of finding satisfaction in merely contemplating the superiori-

¹ *Energies of Men*, p. 236.

² We must distinguish 'self-love' in the sense (a) of admiration of the self, and (b) of selfishness. When a man is 'selfish' it is because he wants something – say the best seat in a theatre, or the best cut off the joint, more than he wants to please his friend who would also like it. What he really 'loves' is the seat or the best cut, not his 'self', of which he is probably not thinking at all.

Self-love in the sense of admiration of myself is something different. So is the desire that I shall appear well before men. The latter tends to lead to precisely the opposite behaviour to the kind of selfishness just mentioned. I may care much more about what my friends think of me than I do about bodily pleasures and so I give them up to please my friends and am reckoned unselfish. Such 'self-love', if it can be called that at all, is based partly on the craving for the affection of others, and it need not be accompanied by any conscious thought of the self as such. The nature of self-love is admirably discussed by W. JAMES' *Principles of Psychology*, Vol. I, p. 320.

ties of the self, of enjoying the elation brought by the deference and homage of others (whether actual or only fancied), we call the sentiment "pride"; and when the superiorities (fancied or real) in which satisfaction is chiefly found are trivial or of the body merely, we call it "vanity". On the other hand, there is "self-depreciation" when a man thinks too little of himself – an attitude prompted by strong self-submission.¹

A man's idea of his 'self' as it is, and his ideal of what he would like it to be are, of course, more than the blend of his self-assertion and self-submission. They are still more complex. A man's idea of himself, for example, includes some realization of the strength of his tendencies and sentiments, and of his real likes and dislikes. Both of these types of self-knowledge may be brought home by experience. A man's idea of himself is also influenced by what he knows or imagines others think of him.

So far as a man cares for what others think or might think of him, so far he will also have a social *ideal* of the self – what he would like to become; but again this ideal need not be a highly moral one. Mere assertiveness and desire for prestige may make him seek above all else to be the best football player in the school or the greatest authority on Shakespeare. So the 'ego ideal', it should be noted, is not identical with a moral ideal.

Character and the self. The more a man ceases to be the creature of varying and often conflicting impulses, or to be dominated by the influence of persons with him at the moment, and the more he builds up a few main sentiments and especially one master sentiment which dominates his conduct, and the nearer he comes to controlling all his actions by some ideal of conduct

¹ See McDougall's *Outline of Psychology*, p. 428. The whole chapter is well worth reading on our present topic. At times McDougall's wording may lead to some confusion of thought when he is emphasizing the supremacy of the self-assertive and submissive tendencies in the sentiment of self-regard. We are not, of course, assertive or submissive *toward* the self. Also I think at times McDougall over-emphasizes the influence on volitional action of this self-regarding sentiment, as we shall see later.

or ideal of his own 'self', in short, the more stable and consistent he becomes, the more he reveals what we usually call *character*. This term implies essentially something relatively permanent: the organization of the self as revealed in conduct – whether that conduct be on the whole morally good or bad.¹

We may profitably consider here an inquiry into the elements involved in a stable character. We shall see that it emphasizes what has been already said about the importance of checking momentary desires and looking ahead to consequences.

Consistency of action and volition. In estimates of various kinds of character and temperament traits made by E. Webb, it was found that there appeared a general factor, prominent especially in estimates of such traits as 'perseverance in the face of obstacles', 'kindness on principle', 'trustworthiness', 'conscientiousness', and 'far-sightedness'.² This general factor Webb himself interpreted as 'persistence of motives', or 'consistency of action resulting from volition or will'. (Hence Webb labelled the factor 'w'.) This would clearly involve the power of looking ahead and checking immediate impulses and determining action largely by the thought of the future. It was found to be weak in those individuals who very easily became angry or were markedly eager for admiration. Repeating Webb's work, R. B. Cattell confirmed his results, finding further correlation of 'w' with relative indifference to sensuous pleasures and with absence of emotional oscillations.³

'Anything,' Burt writes, 'making for emotional instability must hinder the steadiness or persistence of moral motives.' Hence Burt thinks that Webb's general factor of 'persistence of motives' or 'volition' is *inversely* connected with the general factor of 'general emotionality' which Burt himself found. He

¹ Some psychologists prefer not to use the term 'character' because it involves ethical judgements. But I do not see that it need. We recognize a man may be a 'regular bad character'; and this distinguishes him from the man who sins impulsively and falls below the normal standard of his more permanent selfs.

² See E. WEBB, 'Character and Intelligence', *R.J.P.*, Monograph Supplement No. 3. A useful summary of Webb's findings is given in C. SPEARMAN, *The Abilities of Man*, p. 347.

³ See R. B. CATTELL, *A Guide to Mental Testing* (1936), p. 192.

would regard 'both the instability and the non-persistence of motives as the result of an excessive strength of all the primitive emotions in a person whose intelligence was too weak or too undeveloped to control them'.¹ As Burt points out, the 'consistency of action' which Webb studied is more a question of developed character, showing the influence of training and experience, whereas Burt's own inquiry, he holds, was more concerned with innate impulses and more primitive reactions.

We may, I think, agree that the practice of looking ahead and considering future consequences depends largely on the absence of emotional instability and on intelligence applied to the thinking out of consequences and the estimation of comparative values. It may also depend partly on an innate capacity to imagine vividly future consequences. Emotional stability and ready tracing and imagining of consequences create favourable conditions for deliberation and reflection on the consequences of yielding to one strong impulse of the moment, and so they enable deliberate choice and volition to take place.²

I do not, however, think even this analysis of the tendency to look ahead is quite complete; for the factor of timidity or courage may enter in. The cheerful, optimistic, courageous person is more apt to let tomorrow take care of itself than is the fearsome, apprehensive one. Let us consider the nature of volitional action more precisely.

Volitional action not a 'faculty of will'. The essence of volitional

¹ *Character and Personality*, Vol. 7, 1938-39, pp. 253, 4. 'Stability of character,' Burt writes me in commenting on the above passage, 'I think, is mainly dependent on the ratio of two things - the intensity of general emotionality and the level of general intelligence. A person of high intelligence can carry a large amount of emotional energy without getting unbalanced. I remember on one occasion being thrown a little into contact with Lloyd George; and my first impressions were that his high amount of emotionality reminded me very much of the symptoms of an exceedingly unstable person; but the striking thing was that he was not unstable at all. His quick intelligence seemed to control it all, though he was full of emotional life.'

² WEBB found the tendency to work 'for distant objects' correlated more highly than any of the character qualities with 'profoundness of intelligence.' *Op. cit.*, p. 54, Table 21. It gives also the highest correlation of any quality with the tendency *not* to abandon tasks because of obstacles; naturally, as these seem to be almost identical qualities. See Table 4.

action consists in the consideration of two or more alternative courses of action, the deliberate choice of one action and the acting in accordance with the choice made. This process may depend upon several elementary functions and must not be thought of as a mere result of a separate 'faculty' of will. In its fullest form it is more like 'Character in action', which is McDougall's definition of 'will'.¹ It is essentially the opposite of action due merely to an immediate strong impulse; indeed, in volitional action the choice is made sometimes of what seems to be the less pleasant course, and in accordance with the weaker of two or more conflicting motives, the success of the apparently weaker one being determined by the greater strength of the sentiment to which it belongs.

We must not, however, regard full volitional action as something sharply distinct from any other type of action. As soon as there is *any* reflection about the consequences of an impulse and the resulting checking of that impulse, we have the first approach to volitional action. We are still nearer when, in a conflict between two impulses or between two sentiments, there is consideration of the respective consequences and finally a choice between them; but even that is not volitional action of the whole self. For that we require that the alternative actions should be considered in relation to the main aims and desires of the self as a whole with its dominant sentiments. Only then do we get volitional action in its fullest degree, and then it becomes more nearly an expression of the character as a whole, with full 'ego-involvement'.

Volition and the idea of the self. There is a considerable weight of opinion in favour of the view that genuinely volitional choice, at least when there is a problem of moral conduct, involves the man's general idea and ideal of himself as an agent and of himself as a *permanent* self. As Stout says, 'The impulse of the present moment belongs to the present moment; but this is only a transient phase of the total self.'² Stout goes on to describe a man tempted to have another bottle of wine even if it

¹ See his *Outline of Psychology*, p. 442.

² G. F. STOUT, *Manual of Psychology*, Fifth Edition, revised by C. A. MACPHERSON (1938), p. 630.

means getting drunk. He reflects that he will regret it later if he does. It would be violently inconsistent with his 'normal tendencies'. He may think of his position as church-warden, or of what his friends would think of him, and so on. Hence, if he decides to stop drinking, it is due to the influence of the ideas of other aspects of his 'self' and their associated impulses, or by those enduring sentiments which constitute so large a part of his whole self.¹ McDougall's view is very similar to Stout's, but he describes deliberate volition as being due to a man's 'self-regarding sentiment'.

Among other leading psychologists Drever and Nunn also agree that some ideal of the self or the self-regarding sentiment may be a supremely important item in the deliberate choice between two conflicting lines of action, in what is called volitional action: or more popularly an 'act of will'.² But I think that this reference to an ideal of self describes rather the process in a highly developed type of character and in rather exceptional cases of important moral decisions. The reflection that 'I should not like to be like that,' when a man considers and thinks of himself doing a mean action, is not, I imagine, a common procedure, judging not merely from my own experience but also from inquiry among others. We rather, I suggest, contemplate the two possible actions A and B and then we feel repulsion about A: we think 'that would be a mean trick'; or we feel some keen satisfaction at the thought of doing B; or we feel some of the interests and strong tendencies involved in one sentiment directed to B as compared with those directed to A, and we choose B. Too frequent explicit reference to an ideal self would usually indeed be thought somewhat priggish.

I was so sceptical as to whether such references, in thought, to the ideal self were at all common in decisions as to conduct

On p. 629 STOUT says that in voluntary decisions 'special conations . . . are first considered in their relation to the *total system*'—my italics—'of tendencies included in the conception of the self'. This seems to me to express the extreme degree and, perhaps, an ideal of volitional action; but we have, I should maintain, the essentials of volitional action even when there is merely reflection on alternative actions and their consequences and then a definite choice.

¹ See J. DREVER, *Instinct in Man*, p. 217, and T. P. NUNN, *Education, its data and first principles*, 3rd edit., p. 200.

that I made a brief inquiry among a class of graduate students numbering thirty-eight (all women except for half a dozen men). They were asked to describe as precisely as possible the mental processes which took place in their minds in deciding on three imaginary problems, as follows:

Question A. You are asked for books to lend to the Forces, who need them badly: you have a book which you know would be suitable for the purpose, and which at the moment you do not need, but which you may need, sometime in the future. What would you do?

Question B. You have heard of a vacancy which would suit you very well. You have a great friend who would also be well suited for it, but you fear that if she (he) heard of it and applied she (he) would be chosen in preference to you. What would you do?

Question C. On a dark night near your house you find a purse containing £10 in notes. No one is in sight and you can safely take it and say nothing about it. Would you do this or would you return it to the police office, or what would you do?

Now in all of the replies to these the students were given ample time to think over the problem and it was emphasized that they should not only say what they would do but should describe what happened in their minds while making the decision.

I recognize fully that these were only imaginary problems, and that the people reporting might be wrong in estimating how they would act or why they would so act in real situations. The results are quoted only because they seem to me at least as useful as the reports by a few psychologists even as distinguished as McDougall, and Stout, as to how they would come to such decisions; and taken as a group they should be more reliable than any one psychologist's surmise as to how people in general come to such decisions.

In all the 114 answers there was only one reference to the thought of an ideal self. In the question about the vacant job, twelve students referred to the discomfort which they would feel after taking the less worthy course, and in Question C

(money) there were seven such references. As to the lost money, nine students said their decisions would be instantaneous with no thinking or reasoning about it; five referred to the feeling of sympathy with the one who had lost the money. In all the answers three referred to how *they* would like to be treated in such circumstances.

Summing up, we may say that there was little evidence of any reference, in these specific problems, to an ideal self; and it should be noted that the persons concerned were university graduates and presumably more reflective than the average.

The same questions were also put to a group of thirty-three young workers (twenty boys and thirteen girls) between the ages of about fifteen to eighteen, by my colleague Dr Wall. Perhaps we cannot rely quite so much on the introspective ability of these young people, but here again there were no explicit references to the ideal self, though answers of the type, 'I should feel it unfair' given by thirteen, included references to 'bad conscience' and the remark, 'It would make me feel terribly selfish.'¹

A feeling of sympathy with the other person's point of view was mentioned as follows:

On A ('The book) fifteen times.

On B ('The vacant job) twice.

On C ('Money) eight times.

In the question as to money six statements suggested an automatic decision based on the principle of honesty.

We find then in these experiments little evidence of any reference to an ideal self or to any very conscious self-regarding sentiment. It is possible, of course, to suggest that the sentiment of self is acting unconsciously. But this would seem to require that in the past it has acted more consciously. No doubt the thought of what one would like to become and what ideal type of character to achieve is often suggested by parents to young children; or it may be thought of by many adults when really

¹ One girl wrote: 'If I kept the money, I should have a guilty conscience when I was spending it and in the end my conscience would get the better of me!'

serious moral problems have to be faced. But how frequent are such explicit references to an ideal *self* (as distinguished from an ideal of *conduct*) or how far and how often there is conscious functioning of a self-regarding sentiment, seems to be an unsolved problem, and so is the problem as to whether it is desirable to suggest such references to an ideal self when we are trying to guide or influence young people. We are on safe ground, however, in suggesting and exemplifying objective ideals of conduct and in letting it appear to children and young people what others will think of them if they act in this way or that. For our ideas of what we would like to be grow largely from our ideas of what we would like others to think of us. There is always implied a reference to some (ideal) judge though it may be an *élite* few. After that is 'set' it may function as an unconscious attitude.

But in moral training, to emphasize too much what others would think may be to encourage hypocrisy. The emphasis should surely rather be on the objective value and excellence of kindness, sympathy, truth, justice, and so on.

Ideals and moral sentiments. We may confidently assert, however, that the fully fashioned character is dominated by some ideals, even if we do not agree that it is always dependent chiefly on a conscious 'ideal of the self'. Such objective ideals or general rules of conduct are slowly formed in the child, chiefly by suggestion (including suggestion through example) of persons whom the child respects or loves — parents, friends, teachers. First, comes the sympathetic response to strong feeling expressed by another against a cruel action, or with a kind one. Then actions in which a resemblance is detected to this first one, rouse a similar feeling. Finally, when the youth can grasp the abstract idea of kindness or cruelty a general sentiment towards the idea of kindness or cruelty may begin to grow: so that some forms of cruelty may come to rouse his antagonism because of the general sentiment, even if the particular form of cruelty alone would not have roused his antagonism directly. Such an attitude towards a general ideal of conduct or an abstract quality such as 'justice' is usually termed a 'moral sentiment'.

The moral sentiments of many (perhaps most) people never rise beyond those of the groups in which the individual find himself: for example, the gang's ideal of 'playing the game' or being true to a pal, even in pursuit of crime; or the ideal of honesty as shown by those people a man deals with in business, which may be lax enough to allow some sharp practice, e.g., taking advantage of another's ignorance of the true value of an article, yet without actual lying or dishonesty. Higher moral sentiments seem to depend on a man's first detecting the dishonesty or injustice, etc., in whatever guise they may appear, and on his being sensitive to the wider ideal of conduct. In the example just cited, sympathy with the other man's loss through mere ignorance would result in some persons in a revulsion against taking advantage of it, and a wider sentiment of dislike of 'meanness' or 'sharp practice', or a love of fair dealing would replace the narrower kind of sentiment of honesty.

Such an adoption of higher moral sentiments would in its origin depend partly on the relative strength of the innate tendencies of the child and partly on the influence of the ideals of those around him, which influence, in turn, may depend on his suggestibility, or on his affection for some of those around him, and so on.

The adoption of moral rules may not be altogether free from egoistic tendencies: for a man may recognize that honesty pays and that others applaud generosity. Few of us, perhaps, can escape some degree of such complication in our ideals of conduct. Yet some fine characters seem to do so and to rise far beyond the ideals of those around them, to whom they become leaders. Then the admiration and love of others for the character and personality of the leader may bring them to a higher level: a fact which the apostle Paul expressed in the words 'The love of Christ constraineth us', and which is implied in Matthew Arnold's fine poem on Rugby chapel, in which he writes of his father as an inspiring leader in the weary march through life.

'We were weary and we
Fearful, and we in our march
Fain to drop down and to die,

Still thou turnedst and still
 Beckonedst the trembler and still
 Gavest the weary thy hand.
 If in the paths of the world,
 Stones might have wounded thy feet,
 Toil or dejection have tried,
Thy spirit, of that we saw
 Nothing, to us thou wast still
 Cheerful and helpful and firm.
 Therefore to thee it was given,
 Many to save with thyself.'

Later Matthew Arnold goes on:

'And through thee I believe
 In the noble and great who are gone.'

Such belief in individuals who express in their lives a high ideal, and the attraction towards those individuals, are the first conditions for the adoption of high ideals for their own sakes. For most it may be not only an essential condition but also the highest level they are likely to attain.

Many, I believe, fail to reach the higher levels of social development because they do not come into close and repeated contact with fine leaders who also happen to have those qualities which appeal to them: and because those leaders with whom they do come into contact have too obvious flaws. Some individuals may gain much stimulation and inspiration through the medium of books; but for most the direct appeal of personality is essential for the greatest results.

Moral habits and moral training. We have discussed volitional choice and action and unifying ideals of conduct, and the ideal of self, because of their importance in many decisions, and especially in the formative stage of character and in the turning points of life. It is not, however, suggested that serious debate as to which of two actions he should carry out is constantly going on in a man's everyday life. Soon most of his actions become 'habitual' in the sense that his sentiments and ideals having repeatedly resulted in a choice of A rather than B, he comes to

perform A without stopping to think of the reasons, or even to feel much of the original impulses which led him to choose A. Thus he acquires the 'moral habits' of telling the truth, of not stealing, of going to his work even when he would like a day off, and so on. Thus habit becomes a great saver of time and energy. Only when some exceptional circumstance arises, when the conditions are not those in which the habit normally functions, does he pause to reflect or need to make a deliberate choice. A man who would never take money out of a till may be uncertain at first what he should do if he finds a pound note in the street on a dark night. Shall he keep it, or take it to the nearest police station so that there may be a chance that the loser may regain it?

It is because so much of everyday life seems to consist of mere habits that some people, in the planning of social and moral training of the young, put all the emphasis on the setting up of good habits, forgetting (a) the very specific nature of most of such habits, and (b) that the most important habits are themselves ultimately dependent on sentiments, and these in their turn upon innate tendencies modified by experience. If there is a big change of external circumstances a mere formal habit is apt to break down. Transfer some men to Mandalay, and, as Kipling suggests, for them now 'there ain't no ten commandments'.¹

On the other hand, we must admit the value of specific habits so far as they go: it is better that a boy should have come to the stage at which he inevitably resists the temptation to steal money even if he would still cheat at cards or keep excessive change given him by a bus conductor, rather than that he should not have acquired even that limited habit of not stealing money directly. The acquirement even of very specific and limited habits does at least lessen the range of actions which are dependent on the setting up of a more general sentiment for honesty. Similarly, it is better than nothing if a boy learns, even somewhat mechanically, to give up his bus seat to an old lady, and to speak politely to older people and strangers, even

¹ Cited by GRAHAM WALLACE in his chapter on 'Habit' in *The Great Society*, p. 81.

if he has not yet grasped and accepted a wide principle of courtesy covering many other kinds of politeness. All I am warning the reader against is the assumption that learning the specific habit necessarily produces the wider spirit of general courtesy.

We may conclude this chapter by suggesting that the main hopes for effective moral education seem to be as follows: First, that in infancy and early childhood the right type of conduct should be exemplified by the parents and the 'right' rules suggested. Secondly, that in later childhood and adolescence there should develop a love of and admiration for some person who thus acquires great suggestive force, which tends to lead in the first instance to external imitation. Third, that this admired and loved person should express in his life high ideals of conduct, which when clearly formulated, may through his influence be adopted by those who come under his influence and applied widely — perhaps to new conditions different from those in which they first learned to adopt them.

What still seems doubtful is whether it is advisable in dealing with young people to encourage reflection as to the ideal self they would like to become; rather than stressing the more objective desirable aims, such as pleasing others, helping those in need, re-dressing wrongs, and so on.

CHAPTER XIV

PLAY, AND 'THE PLAY-WAY' IN EDUCATION

We have now discussed most of the innate tendencies which underlie behaviour, with their conflicts, their co-ordination, and their organization into those sentiments which go to the building of character. But we have still to deal with several tendencies indicated in the titles of this chapter and the next two. We have kept them till now because they form a good transition to the study of the more intellectual aspect of mental life and its development in the child. The topic of play is of interest, not merely because of the importance of the recreative side of life, but because of the increasing recognition of the fact that the play tendency can be enlisted in the process of education: hence the frequent use of the terms 'Play-way' or 'Play Methods'.

First, we must be clear what we mean by 'play' and as to what distinguishes it psychologically from work.

Definition of play. Here we must beware of the danger (already mentioned several times in this book) of assuming that all processes or experiences which we can label 'play' are substantially alike. Most play activities in adults and in children (except in early infancy) are complex and have several motives behind them. A man may play golf partly for the sake of his health; partly for the pleasure of companionship; enjoyment of the scenery may add a further motive. The interest of competition is usually also a strong element, though the main factor may be the enjoyment of the exercise of the particular skill involved and of success - when it comes. Any game or sport which continues to hold the interest of adults will usually be found to be complex in its appeal.

If, however, we seek for the essential characteristic of play, we are safe in saying that it is an activity which is undertaken for

its own sake. It may be replied that such a definition would fail to distinguish it from much work which is enjoyed, but that may be readily admitted. Work which a man would do for his own enjoyment even if not paid for it is, psychologically considered, identical with play. Indeed, when thinking of the *educational* application of play methods, I think it would be more expedient as well as correct, to speak of 'work for its own sake' rather than 'play'. Conservative sceptics would be less affronted!

Again, to those who object to the view that play is primarily activity enjoyed for its own sake, and who point out that play is often activity with a very serious end in view, and that the whole process is taken seriously both by children and adults, there is a further reply. No doubt the child is serious in trying to build its castle and the youths are intent on winning their football match; but the serious end is itself adopted without external constraint or economic necessity, and is adopted largely because it is required to stimulate and guide those activities which are enjoyed for their own sakes. The essence of play then lies in the fact that the enjoyment of the activity is its own end. This is exemplified well by the child who makes sand-pies only to knock them over and start again; it is usually not enough for him that you make them for him. In making a sand-castle he enjoys constructing it. If he then keeps it and plays at defending it from an enemy, it is a new activity now that is enjoyed.

From this fact that the essence of play lies in the enjoyment of the activity for its own sake, there follows the corollary that the child can stop it at will. Play which the child is compelled to carry on when he has become bored with it – as sometimes in compulsory games – ceases to be play.

Play as release of energy. Everyone who has watched children let out of school into the playground for an interval, has seen how some of the children will for a time simply rush about, perhaps shouting, but doing little else. It all looks as though some physical energy had been accumulating during the enforced sitting in classrooms, which must be released. Herbert Spencer indeed regarded play simply as a means of releasing an excess of energy.

This view has been rightly criticized on the grounds that play can be carried on almost to the point of physical exhaustion, as in competitive games and wrestling. Nevertheless, all play does imply that there is some urge (with its corresponding physiological energy) which the child is impelled to follow. In the healthy child there is a tendency to be active about something; and disinclination to play is sometimes a sign of something wrong in the child, at times even of some neurosis.¹

Biological function of play. While the individual child is playing just for the fun of it, he is at the same time often unwittingly doing something which is biologically useful. This aspect of play was stressed by Karl Groos, who pointed out that the play of kittens in crouching and springing upon a piece of paper, or the play of puppies in chasing or fighting, is good practice for them for future hunting or fighting, on which their lives, in a state of nature, would depend.

There is general agreement that Groos's theory is true so far as it goes, yet it must be interpreted in a broad and general way. The child plays with all its capacities and impulses as they develop; and such play is vital for the proper development of the various capacities. Indeed, there is truth in the saying that a child does not play because it is young, but is young in order that it may play. But the little girl's devoted attentions to her doll cannot be regarded as teaching her in detail how to feed or bath a baby. It is, on the other hand, an early if only partial expression of the maternal instinct; and such expression may possibly be desirable for its full and healthy development.

Play in infancy. The best way to study play is to trace its beginnings in infancy. We find that as each new capacity matures the healthy active child exercises it with interest and delight. I noted the following stages in my own children and other observers record similar facts.²

Extreme delight was shown in all newly matured abilities, such as creeping or grasping small objects. These were

¹ On play as a release of energy see McDougall's *Outline of Psychology*, p. 170.

² A detailed account of observations by myself and others on play in infancy will be found in Chapter IX of my *Psychology of Early Childhood*.

constantly practised, sometimes for weeks or months, until mastered. The child seems to have an insatiable appetite for sensation, movement, and manipulation. For a time he may have 'a mania for dropping things'; then a special interest in climbing. So intense is the impulse to play that often an infant after screaming with hunger will, after a few mouthfuls, insist on getting down to play. Social play — getting the mother to join in, teasing her, and roaring with laughter at it — occurs constantly in the second year.

Various observers have noted children of a year or two old repeatedly practising especially difficult tasks. Thus, my boy B, not long after learning to stand up, tried to stand while holding his big ball in his mouth. There were repeated failures, the ball dropping, but again he would try until successful. Remarkable persistence was shown not only in such new and difficult tasks but sometimes also in easy and simple games, especially if another person joined in. Thus the boy B at 0; 10 threw the sugar tongs on the floor. Miss L. picked them up; he threw them down again and so on about fifty times, B laughing constantly. Here is a form of social play, which also appears in several notes of B at 1; 0, which report his giving us things — toys and scraps of paper — and then receiving them back. A particularly interesting task or activity may be repeated a hundred times without pause.

Play of this type, even with purely intellectual activities, occurs in the earliest years. For example, I noted that my children, after first grasping the meaning of the word 'two', would for days look about for pairs of objects, and gaily call out 'two gee gee' or 'two puff puff'; or the names of animals in pictures would be learned and the child would demand that I should ask him the names so that he could answer. In this way some new ability would be practised till it was mastered.

Play with emotions has already been mentioned in the chapter on 'Fear', where I reported how my children would ask me to 'play at lions' till they screamed with apparent fear and begged me to stop, only to ask for the game again when they had recovered. Several of my children played at 'contradicting', asking us to say various things so that they could reply,

'No', or 'It isn't'. Several observers record 'playing' at being disobedient, and asking for orders in order to refuse to carry them out. Here comes a satisfaction of the strong self-assertive tendency.

Playful fighting and wrestling between boys should be regarded as a natural outlet for the impulses of aggression and pugnacity, and harmless so long as it remains genuine play; that means there should be no intention to hurt, a restraint which even a dog shows in playful scrapping with another or with his master. But such play, of course, can easily overstep the mark.

Finally, in a wider sense a child loves to play at being a different personality - being a mother, doctor, teacher, soldier, and so on, no doubt to get the 'feel' of it. Indeed, a few years later this purpose may become fully conscious. I asked one of my children of ten years, 'Why do you like playing at being a school teacher?' The child replied at once, 'Because I like bossing people about: I want to be a school teacher.' Make-believe play is no doubt often a means by which a child can satisfy his self-assertive tendencies without the hindrance which reality would impose upon them. Incidentally, it is quite possible that by taking a particular part in reading or acting a good play, a youth may extend his insight into human nature.

Play as relaxation. For a complete view of play we need to go farther than to regard it merely as the enjoyment of the exercise of a new activity; or even as the expression of a dawning instinctive tendency. In adults as well as in children it is often primarily a form of relaxation because it is a reversion to a simpler or more primitive type of activity than that involved in most work, especially intellectual work. This is a point of view stressed by the late Sir Percy Nunn. 'Consider,' he writes, 'the weary child who forgets his aching legs when the monotonous walk is turned into a game of hide-and-seek, or the tired man who returns to his work refreshed from a game of billiards or golf.'¹ So recreative play is not merely 'a channel of discharge for superfluous energy, but a means by which new energy is placed at the disposal of the organism'.

¹ See his book, *Education, its data and first principles*, Chapter VII, 3rd edit., p. 82.

Play methods in education. It is this extra energy and keen interest which the advocates of play methods in education have sought to enlist in the process of learning. As we remarked in Chapter II, the boy who is collecting football cards for fun seems to learn the names of captains and the team colours with ease. My former colleague, Dr W. D. Wall, when an instructor of backward adolescent girls in a continuation school, found they had no desire to learn to write good English, but that they were very keen to act. Dr Wall ingeniously suggested that they should write a play together, to which they eagerly agreed. The writing of the play gave ample opportunity for instruction in the writing of good English. With the backing of the energy and interest supplied by the impulse of self-display and self-assertion which had scope for satisfaction in acting, the process of genuine instruction proceeded much more satisfactorily.¹ Keenness is sometimes secured in class (as Nunn points out) by grouping the pupils into teams, and letting them compete with one another. The question may be raised: 'But if this keenness is due to the self-assertive impulse roused in competition, why does not that impulse work as effectively when a boy is simply competing for himself against all others?' The answer is that for most pupils, more especially adolescents, the social bonds give an added interest and motive. They wish to please and help their fellows; they feel more keenly reproaches for failure from their fellow pupils than from teachers: whereas in single competition the boy's self-assertion is partly counter-balanced by the friendliness he feels for those he is competing with and, at times, even by their disapproval if he beats them too frequently. Hence the unpopularity of some pupils who are labelled 'swots' by their fellows.²

Boy Scouts and the camp school. The Boy Scout movement illus-

¹ CALDWELL COOK long ago got his pupils in the Perse School, Cambridge, to write their own plays. See his book, *The Play-Way*.

² A boy of twelve was recently brought to me by his parents because, after doing extremely well in his Secondary School, he had begun to take a dislike to it and even to play truant at the time of examinations in which he was pretty sure to top the list. I ascertained that, although at or near the top of the class, he was much below the average age of the class (which included backward boys of fifteen) and was jeered at as being a 'swot' and mildly bullied.

trates well the way in which various play motives may be enlisted in the service of both intellectual and moral training. First, there is the suggestion of the more primitive life of the wood and prairie, with its camping and tracking; a hint of the adventurous life of the cowboy and of the Red Indian's nature lore. Then the gregarious and other social tendencies are enlisted in the forming of a gang, with its own meeting-place, its secret signs, and special loyalties. This is further strengthened by the common uniform, which also affords some satisfaction (surprising as this may seem to some) to the tendency to self-display. Into this system is ingeniously slipped much useful knowledge and some valuable moral ideals; again the main loyalty here is to others of a similar age with similar interests and whose approval means so much, or to the Scout Leader, who, they feel, is really one with them in these interests.

The natural successor for older boys to such Boy Scout make-believe as appeals to the younger boys is the school camp, which gives scope not only for physical but also for valuable social training.

A still better example of the combination of a play interest with intellectual as well as social education is afforded by the Farm Camp School. An example of this has been described in detail by a pioneer in this experiment whom I am proud to claim as a former research student of mine.¹ In this camp some sixty boys and girls lived for a month with four members of the school staff. In the afternoons they were employed by local farmers on genuine farm work; in the mornings they had lessons on topics intimately connected with the farm and country. Material for Nature Study would obviously be varied and plentiful; farmers' costs and sales accounts gave material for book-keeping. Statistics about various aspects of country life took the place of formal mathematics, and so on. The comments of pupils later revealed their keenness and enjoyment, in

¹ See DR W. S. FLACK's article, 'An Experimental Farming Camp School,' *B.J.E.P.*, 1945, 15. Dr Flack brings out also the valuable gains from the better understanding by those city youths of the life and problems of the countryman: and from their living together in a community.

spite of some bodily discomforts in the camp, and frequent fatigue in the farm work. I think Dr Flack makes out a good case for the view that, in addition to physical benefits and the help to the farmers, the Farm Camp School justifies itself on educational grounds. But some may remain sceptical who have never grasped that more may be learned in half the usual time if there is genuine interest. Some remarkable essays on the Camp by senior boys gave testimony to the value of this 'play-way' in education, though I do not suppose they had ever heard the expression.

Play methods not always needed. It is not suggested that 'play methods' are always needed, or always possible. They are not needed for the intellectual *élite*, whose capacities for and interests in some studies are so great that they find ample satisfaction in them, even when they are pursued in the more conventional formal ways. For example, some boys with marked abilities for mathematics may prefer solving problems to such a scheme of work as was followed at the school camp: and many adolescents will read poetry for love of it, even if it is not prescribed for homework. Such pupils are actually themselves adopting a 'play attitude' which, as we said at the beginning of this chapter, is really identical with doing work for its own sake and because of its own inherent interest.

Such an attitude depends in the first place on a strong intellectual interest in the particular study. For prolonged pursuit it requires also marked capacity for the study; otherwise progress will be so slow and satisfaction so slight that interest wanes. Even for the intellectuals, the work must on the whole be within their capacity, though they are stimulated by some degree of difficulty. For the less intellectual children the work must be well within their capacity so that interest is maintained by constant success.¹

Finally, we may admit that even when work is kept within the capacity of the child, some pressure may be necessary at certain stages, as in the early mechanical stages of reading, because it is only later he can appreciate the value of the work.

¹ Cf. the paragraphs on Conation, Chapter IV. We shall return to this topic in Chapter XVII.

But we must be sure in such cases that the pressure is really necessary.

Intellectual work and the necessary conditions for continued interest. Let us return for a moment to consider some aspects of popular games and recreations. We find that the freshness of some games is enhanced and sometimes retained only by their being subject to seasonal limitations. The first possibility of skating is welcomed – sometimes too daringly – partly because it is so rare an occurrence in this country. When roller skating defied the seasons a period of immense popularity was succeeded by a great decline in interest. Many games which have no weather limitations have their own conventional seasons, e.g., marbles and hopscotch. It would seem, then, that some element of novelty and change is at least important and for some play activities probably essential, if they are to retain their strong appeal.

The moral is obvious. Surely we cannot expect an attitude of continued interest towards intellectual studies if there is monotony. As we saw, the infant enjoys playing with each new capacity, but usually ceases to do so when the novelty has worn off and new activities become possible.

Play methods and freedom in education. We have agreed that one essential of a genuine play-attitude is that the activity is enjoyed for its own sake and that it can be stopped at will as soon as this enjoyment ceases. Hence the play-way resembles the 'freedom' ideals that have been advocated and followed by some. Tolstoi sat in his little school and waited for the children to come to him and demand instruction. Montessori provided for the children apparatus of a kind that they loved to play with, and which was, she claimed, also instructive. The children were allowed to choose which apparatus they would use and to change it when they wished.

In the Montessori system, however, as in others with ideals of freedom, or with play methods, there is much more limitation of freedom than appears at first. Thus, Montessori refused to let the children play with her apparatus in ways that were not intended. For example, one piece of apparatus was a block with holes cut in it into which could be fitted half a dozen

cylinders of varying sizes. This was supposed to train hand and eye adjustments and judgements of size. If, however, the child put the big cylinder at the one end and a little cylinder in the middle and pushed it along, playing with it as a train, he was to be stopped.

Similar limitations of freedom were involved in the methods of Caldwell-Cook, who first proposed this term 'the play-way'. I saw him with his pupils in a class at the Perse School, Cambridge. The period was devoted to English and for practice in speaking, the boys (of about twelve to fourteen) giving in turn short lectures to the class. These lectures were afterwards discussed and criticized, both as to matter and style. The boys chose their topics and said what they liked, but they had to be in school at the time and they were compelled to take part in this particular lesson. Here was the limitation in freedom.

The Dalton Plan and individual work. Perhaps the most important example of a scheme based partly on an ideal of individual freedom is the Dalton Plan. The originator, Miss Parkhurst, was influenced considerably by what she had seen of Montessori methods.¹ According to the Dalton Plan, the children study their subjects at the times they themselves choose within, however, the school timetable. Thus, if a boy feels like doing Arithmetic most of Monday morning he can do so, and then take up his English Literature or History as he chooses. The school is organized in such a way that a boy may move from one classroom to another to be in the room assigned for the subject he chooses at the moment and in the presence of the master who can help him with difficulties as they occur. Thus the essential point of the work is really that it is much more individual than class-work. The freedom of the pupils, however, is greatly limited by the 'consignments' or statements of the work to be done within, say, a week or a month, for each particular subject; furthermore, in those schools in this country which have adopted a modified form of the Dalton Plan there are also lessons given by the teacher to a whole class at appropriate times and particularly in subjects where class instruction

¹ See HELEN PARKHURST, *Education on the Dalton Plan*, 1922.

is especially suitable, e.g., English Literature, or the demonstration of chemical experiments.

The chief value of the modified form of the Dalton Scheme lies really in the fact that it allows for more individual work, important especially in mathematics and in foreign languages. Individual abilities vary so much, as we have seen, that in such subjects it is desirable that the pupil should go pretty much at his own pace; and even far less time spent in instruction may produce better results if that instruction is given precisely at the right stage. Some pupils in listening to a lesson on, say, stocks and shares, may get very little from it because they are still very shaky in percentages.

There is little doubt that we have not gone nearly far enough in developing such individual work in schools. This is owing partly to the large size of classes and shortage of teachers, but it is partly owing to the natural conservatism of the teachers and to the prejudice against changes, especially those which are labelled with titles suggesting revolutionary ideas, e.g., 'Freedom in Education', or 'The Play Method'. If enthusiastic pioneers were content with the advocacy of more individual methods and with 'work for its own sake' as an ideal (as previously pointed out) progress might be more rapid.

Influence of the teacher's personality. One more general comment may be made on some of these pioneer movements in education, namely, that it is difficult to say how far valuable results have been secured through the method advocated and how far they are dependent on the personality of the pioneer himself. The work that I saw done by Caldwell-Cook would, I am sure, have been a failure in the hands of some teachers. The same thing might apply to Montessori methods and the Dalton Scheme. Some movements, indeed, which have been based on very different and sometimes opposed schemes, have proved equally successful in the hands of the respective pioneers. Thus Decroly produced notable results through his reforms. One of his main ideas was that the early learning of reading was much less important than had been thought and should come only as the children demanded it. On the other hand, Miss Charlotte Mason achieved considerable notoriety by her scheme, the

central idea of which was that the children could learn best through reading good English literature.¹

One further point of interest may be mentioned as to Montessori and Decroly. These pioneers both began with the teaching of mentally defective children and after devising methods for dealing with them they adapted these methods to, and indeed used them to a very large extent with, normal children. Now in schools a common error has been for the teacher to address himself rather to the upper section of the class and to leave the dullards dragging on behind and making little progress. So far as the methods of these pioneers were successful, that was due, to a considerable extent, not only to utilizing the natural interests of the child but also, in particular, to using the intellectual functions which at the time were sufficiently ripe to give the best results. This is an important general principle to which we shall return later when we discuss 'Maturation' (Chapter XXXI, p. 493).

The problem of compulsory games. This is not the place to discuss all the reasons for and against compulsory games: there are questions of timetable, of physical health, and so on which have to be taken into consideration. Our concern is only with the psychological aspect, and it is relevant to point out that if a boy is playing football when he would prefer to be doing something else, it is no longer 'play' in the true sense. I have indeed known a number of boys choose the alternative of extra work in class rather than go to the football field.²

The value of games for physical health is, of course, undoubted: and for the great majority compulsion may be no disadvantage, and it ensures requisite teams. Timid weaklings

¹ One is reminded of the similarity in the improvement in different problem children undergoing treatment in child-guidance clinics which follow very different methods. I have suggested elsewhere that this is due to the fact that perhaps the chief value of the child's visits to the clinic may be that he finds himself among friendly and sympathetic people and is removed from conflicts that are developing in school and possibly in the home.

² A little girl of four-and-a-half insisted on coming to the Infant School in which my daughter was then teaching, though the child was under age and could not be registered, or follow the work of the lowest class. The teacher said to her, 'You can go into the corner and play.' The child replied, 'But I haven't come to school to play; I've come to *work*.'

who would otherwise avoid football and other vigorous games may usually profit from some compulsory games - both physically and mentally, if the trial is not severe. Whether, as adolescence advances, a wider provision of alternatives games, or of physical exercises for games, should be attempted, is a question largely of staff and timetable difficulties. But we may add here that the usually assumed value of compulsory games for the training of character is not so simple a problem as is often thought. Its supporters usually hold views as to the general spread of specific training which, as we have seen in previous chapters, are fallacious. They assume that what is learned in playing the game of football will necessarily be transferred to playing the game of life.



CHAPTER XV

ACQUISITIVE, COLLECTING, MANIPULATIVE, AND CONSTRUCTIVE OR CREATIVE TENDENCIES

Early acquisitiveness. The first sign of anything we can regard as acquisitive is the infant's grasping at any interesting object, especially bright objects, which in the early months he carries to his mouth. Soon this becomes particularly grasping at food, which is greatly stimulated by competition; no doubt a fundamental point as we see it appearing in animals. The next and partly overlapping stage of an acquisitive tendency appears when the child seizes and tries to retain things he wishes to play with. Later there comes the time when he begins to make collections of things, some of which may be valued as toys or otherwise useful. Some things collected, however, may be of little or no use, e.g., used tram tickets, and eventually become a nuisance through their accumulation.

Frequency of the collecting tendency. The collecting tendency may originally be associated with the fundamental tendency to store food. It certainly seems to be almost a universal interest. I have inquired of several large groups of my students, over 300 in all, and have found that about 98 per cent. have collected something at some time. Several wide investigations among children confirm this universality. The ages at which this collecting tendency is most universal seem to be about ten to twelve.¹ The variety of objects collected is amazing; for example, this list was gathered from only one class of about seventy students: stamps; tram tickets; flowers; postcards; cigarette cards; shells; birds' eggs; butterflies; tram numbers; motor numbers; engine numbers; engine names; coins; used match stalks; autographs; acorns (one student actually collected all the above at one time or another); crockery; marbles;

¹ See C. BRUNER, *From Birth to Maturity*, pp. 172-5.

horse chestnuts; pencils; worms; matchboxes, and even 'names of makers of washbasins'!

Though collections sometimes are of useless things, those which retain a more permanent hold on the individual are usually associated with some definite interest, e.g., the geographical, historical, and aesthetic interests which accompany the collecting of stamps or coins, the nature study interests associated with birds' eggs or butterflies and so forth.

Collecting can become an obsession, as we see in the miser. Sometimes the house of a miser is found to be stocked from basement to roof with useless rubbish; which is one type of evidence, according to McDougall, that there is a genuine instinctive element in acquisitiveness. Certainly the pleasure of collecting does not lie simply in possessing a good collection: every stamp collector knows the difference between (a) the satisfaction in gathering a collection oneself and gradually filling in the gaps, and (b) merely receiving a present of a collection made by another. One of my students reported that as a boy he was an inveterate collector of many of the things listed above, yet when an uncle left him various collections he sold the stamps, gave away the collection of army badges (though his father was a soldier and he himself wanted to be a soldier), put away the coins and took no interest in them, and gave away the birds' eggs.

There is another argument in favour of a distinction between the impulse to collect and the love of property. Some persons reveal a strong impulse to collect things and then are relatively indifferent about retaining them; others are less ardent in acquiring but very tenacious of things when they do possess them. I have noted this distinction clearly in my own children and in others, and have had confirmatory reports from students.

The educational value of collections. The interest in collecting has been used by many teachers, e.g., by encouraging the collection of wild flowers, stamps (in connexion with geographical studies), picture postcards of famous cities or foreign countries; but there is, I think, scope for a wider use of this tendency for educational purposes. It is important, however, that there

should not be any attempt to compel pupils to collect; because that would, of course, destroy the essential quality of the collecting tendency, namely, the spontaneous expression of an innate tendency enjoyed for its own sake, and therefore a type of 'play'. All the teacher can do is to apply suggestion as well as he can, and to guide and help the pupils in gathering the preliminary materials to start the interest going.

The desire for money and for the acquisition of wealth and property – such powerful motives in human affairs – are something more than the working of an innate tendency. The desire for money is complicated by several things. First, there is the feeling of security which the possession of money gives. It assures the possibility of food and comfort, the purchase of things desired for their own sakes, and some degree of luxury. Second, there is a feeling of power over other men and in some circles the enjoyment of the respect of others which is not given to those who are poorer. Thus the tendency to acquire money and goods is strengthened by self-assertiveness and pride; there is 'ego-involvement'.

Stealing by young delinquents. In his discussion of the acquisitive tendency Burt reports that four-fifths of the crimes of the young delinquents he investigated were thefts. In many cases adequate motive was found in the desire to possess the objects stolen – sweets, attractive jewellery, money to go to the pictures, and so on. But Burt concluded that sometimes thieving was a substitute for another thwarted activity. In one case, he writes:

'Harry, a dullard of sixteen, rejected by his youthful sweetheart, goes straight from his wooing and commits his first burglary: "I couldn't get *her*, he explains, so I got old Ikey's cashbox" – as if the connexion was obvious; indeed, to the psychologist I think it is. It is the pent-up energy of the thwarted appetite that adds strength to the alternative quest which the thwarting of that appetite had itself indirectly provoked. Nellie stealing her mistress's heart-shaped locket when she could not gain her love, Vivian stealing his class-mates' spectacles when he could not acquire their

knowledge of Greek, are perhaps, to some degree, examples of the same illogical procedure; but with them revenge partly supplements envy. To those who think my interpretation a mere *a priori* paradox I should add that the connexions indicated in the text were, every one of them, first suggested by the introspections or self-analysis of the children themselves.¹

Manipulation and construction. As we saw in the chapter on 'Play', the healthy child in the earliest years is constantly doing something and experimenting with his new capacities. Within this general range of activity enjoyed for its own sake there comes the manipulation of objects, feeling, and handling in an experimental way all sorts of materials, e.g., 'fingering' sand or bread, tearing paper, making sand-pies, diverting streams of water, building with bricks, drawing with a crayon, and so forth. Some psychologists prefer to speak of manipulative or experimental activities rather than constructive; and these wider terms are certainly needed to cover many actions which are not constructive. Indeed, one leading psychologist has maintained that even the apparently *destructive* tendencies of children are only another aspect of the tendency to manipulate and experiment, and so closely allied to constructiveness.² But there comes a time, even in the early years, when the child enjoys especially *making* something: building a tower or house with bricks, making a man in plasticine, and later doing woodwork and building up Meccano. Sometimes it seems as though the mere making of the thing is the sole or, at least, the main object. Many readers probably at one time made ropes of coloured wool by means of a cork with a hole through it and four pins on the top. A number of my students confess to having enjoyed doing this and yet making no use of the rope after it was made. Usually, however, in addition to the satisfaction of the activity itself there is the added pride in what is made.

¹ *The Young Delinquent*, p. 451.

² See E. L. THORNDIKE, *Educational Psychology*, Vol. I, p. 139. One of my own students could remember the time when he collected mechanical toys and, as he said, 'satisfied his constructive interest' by taking to pieces his brother's toys but never his own.

The popularity of handwork in schools. At school age this love of making things and manipulating remains. Thus, in an inquiry as to the most popular subjects among 8,000 children in London and South Wales of ages chiefly ten to thirteen, Handcraft came first.¹ Burt, in an inquiry among London Elementary School children of seven to thirteen, also found that, on the average, with boys, Handwork came first and Drawing second; among girls these subjects were only beaten by Dancing and Singing.²

Later, an inquiry by one of my research students among over 9,000 school children (ages ten to thirteen) in Elementary Schools showed that among the boys the most popular subject was handwork at each of the ages ten, eleven, twelve, and thirteen. With the girls Needlework came first at ten, eleven, and thirteen, and at twelve was only second to Domestic Science, itself largely manipulative and constructive. Even for the brighter classes the results were the same.³ So we cannot say that Handcraft is only popular with the duller pupils.

Of course, popularity with the pupils is not the only, or necessarily the chief, test of educational value. But the love of making things is a factor to be reckoned with: and as with collecting, it is one which we could probably exploit more fully in education: for example, in the making of contour models in the study of Geography and History, and for aesthetic education, in the making, by boys, of simple but tasteful utensils, and in Embroidery and Dressmaking for girls.

Modern methods of teaching handcraft. One psychological point may be added as to method in teaching Handcraft. Early formal methods by which, e.g., a boy learned to make various joints before making some useful object, erred in stressing too much the technique (important as that is later) and in underestimating the value of the much greater interest of the child in producing some useful or interesting object. The same error

¹ See E. O. LEWIS, 'The Popularity of School Subjects', *J. Exp. Ped.*, 1913-14, 2.

² See Board of Education Report on the Primary School, 1931, Appendix III, p. 278. I have averaged the separate orders given by BUR for ages seven, ten, and thirteen.

³ See J. J. SHAKESPEARE, *B.J.E.P.*, 1936, 6.

appeared in old-fashioned methods of teaching drawing. I can remember as a boy taking a whole term over an elaborate free-hand copy in which the chief difficulty was to get the right-hand side exactly the same as the left; and when finished the drawing represented nothing at all. Fine technique at some stage in handcraft or art is, of course, important for anyone who is to do really good work. The error has generally been to put it too early and so quench the interest in the child. The error also appears in other activities, for example, music. Many a child, really interested in trying to learn to play the piano has had his enthusiasm dulled by being confined largely to scales and exercises. Along with these essential exercises should go the more interesting learning (and even making) of simple attractive little tunes.¹

On the relative popularity with boys of twelve to fourteen of Handwork taught (*a*) by the technique method as compared with (*b*) the creative method, in which real models are constructed, an inquiry by Mr Hector Lamb gives striking evidence, if that is needed.² Lamb's inquiry dealt with forty boys divided into two groups of equal average intelligence. He found:

- (1) That the creative 'content' course was far more attractive to the boys; attendance at extra voluntary 'content' classes was 68 per cent. – at the technique classes only 31 per cent.
- (2) That in the opinion of the boys themselves they made more progress in the 'content' course.
- (3) That as time went on interest increased in the content classes, but decreased in the technique classes.
- (4) That general behaviour in the technique classes deteriorated.

Lamb also gives substantial evidence based on the detailed reports of four teachers of other subjects on certain character qualities of the forty boys, that after the nine months' course, the content group had improved appreciably more than the technique group in perseverance, accuracy, and self-reliance.

¹ We shall see later (Chapter XX) that interest is essential for the learning of skilled movements. ² See his article in *B.J.E.P.*, 1942, 12.

In none of the qualities estimated did the technique group show superior improvement.¹ We need not suppose that 'faculties' of accuracy or perseverance were increased by exercise, but rather that the satisfaction gained by good progress in one school subject led to a more contented and co-operative attitude in their school life as a whole and to greater self-confidence, especially in those boys who were relatively weak in other subjects. This point we must stress further.

Handcraft and duller pupils. One important value of the inclusion of popular subjects such as Handcraft, Embroidery, or Domestic Economy, and the employment of 'activity' methods, is the effect they have on the pupils' attitude to school, especially among the less intellectual pupils. In the early years when handcraft was first being introduced into the schools an improvement in discipline was noticed, and it was thought that the pupils were regarding their schools with less distaste.² Schools are more popular now with children, but that is partly because much more attention is paid to their interests. For the child who is slow in the more intellectual studies the inclusion of more practical work, in which he can see some results, is likely to lessen the tendency to a feeling of inferiority (or even an inferiority complex) which we discussed in Chapter XI.

It must not be expected, however, that the child who is dull intellectually is likely to be above the average in practical, manipulative work such as Handcraft. This is a widespread but erroneous idea, as already stated (Chapter III, p. 33). It has been found that children with higher general intelligence (or 'g') are likely to be also better than the average in practical or handcraft work; while the dull intellectually are likely to be below the average in handwork.³ The other view has no doubt become common because special attention is apt to be drawn to

¹ See LAMIN's second article in the *B.J.E.P.*, 12, p. 101. The four teachers who made the detailed reports were unaware of the investigation and so unbiased.

² See P. B. BALLARTH, *Handwork as an Educational Medium*.

³ See G. BURG, 'The Estimation of the Abilities at', *B.J.E.P.*, 1933, 13, p. 131, and *The Pupil and His Work*, Chapter IX. Practical ability, its intellectualability, and their relation to general intelligence and to educational ability, by means of performance tests, will be further discussed in Chapter XXIV.

the few dull children who, having high special abilities for handcraft, surpass in it *some* of the more intelligent ones. In addition, the more intelligent tend to pay more attention to and take relatively more interest in, intellectual studies, while the duller tend to concentrate their attention more on work which does at least interest them and in which they can get perceptible results.

In conclusion, the recreative value of handcraft work has also to be borne in mind. We may recall Nunn's view that play is recreative because in it we return to more basic fundamental impulses and rest the higher complex and more recently evolved thinking processes. Now it is quite probable that, in man, intelligence first evolved in connexion with the manipulation of material — the making of weapons and tools useful for hunting, for defence against animals, and for the production of foods, and the hand would here be supremely important, especially as it came to be set free from having to assist in locomotion.¹

¹ See W. E. RITTER, *Animal and Human Conduct*, pp. 307 ff.

CHAPTER XVI

CURIOSITY, SPECIAL INTERESTS, AND THE POPULARITY OF SCHOOL SUBJECTS

Fundamental types of curiosity. We have still an important innate tendency to consider, that of curiosity, together with the associated development of various intellectual interests. The curiosity of some of the higher animals is familiar, e.g., the careful examination of strange objects by monkeys, the persistent staring and slow approach of a herd of young cattle if one stands at a gate and lows like a cow. 'Curiosity killed the cat,' it is said; and certainly if one watches a cat carefully one finds that he does seem curious about such things as a new piece of furniture in the house. As to young children, every mother of a child of average intelligence knows what it is to be pestered with questions, such as 'Why' or 'What is that for?' and she knows the little child's eager exploration and manipulation of any strange small object he comes across.

McDougall has maintained that in animals curiosity is shown chiefly where an object resembles, but is not identical with, one which normally stimulates some other instinct, especially fear.¹ To take an interest in, and to seek to investigate or apprehend more clearly, an object which may prove to be a danger would be clearly of biological value. The same, perhaps to a lesser degree, is true as to an object which may prove to be a valued food, or a suitable mate. Curiosity in humans, however, goes beyond these fundamental matters. For example, curiosity as to causes can hardly be fully explained in this way. Curiosity about the causes of some strange phenomena which might be signs of danger would no doubt be useful. It may be admitted, however, that curiosity about intellectual matters is not of direct importance to the survival of the

¹ See McDougall, *Outline of Psychology*, p. 142.

individual; and so we may expect especially great individual differences in its strength. In some we may expect it to be very weak. For the human race as a whole, however, as one basis of all intellectual advance, great importance attaches not only to the more primitive kinds of curiosity, but to that wider curiosity about objects of all sorts and about causes.

An important and difficult question is why the early eager curiosity of so many children seems to die down into dull apathy after some years at school. One explanation may be that we do not follow the lines suggested by the child's own curiosity and interest, but rather force on him formal studies such as reading, writing, and arithmetic; and that we often discourage the child by refusing to answer questions, either because we want to get on with the work in hand or because we know that no answer can be given to the child which he could understand. (Of course, I assume that the teacher knows all the answers.) Another explanation may be that in many children genuine curiosity of a more intellectual type is only very slight and soon ceases when the novelty of the immediate environment has worn off.

In the evolution of man the development of intelligence and, subsequently, the building of human culture has, no doubt, been preceded by the appearance in some individuals of wider interests and impulses of curiosity as to physical materials, resulting in that manipulating and experimenting which made possible the first construction of weapons and useful tools. Curiosity as to the lands lying beyond the horizon would encourage wandering and the finding of lands better fitted to support life. Curiosity about, and pondering over the behaviour of other humans - in the same, or in other tribes - may (with the persistent collaboration of a blinder gregarious impulse) have helped the understanding of others and led to more useful co-operation. Such early curiosity tendencies and interests may at first have appeared only in some of the members of the species, but these might then act as the early pioneers, inventors, and leaders.

The appearance of curiosity in young children. We can only speculate how such things have happened in past ages, but we can in

young children observe behaviour, and note questions, which indicate curiosity. Here we get so much above the mere instinctive level that some psychologists would regard curiosity as primarily a function of intelligence. Certainly curiosity does work in close conjunction with intelligence, but first I wish to stress the appearance in children of untaught impulses of curiosity, the workings of thought about things. The torrent of questions 'why' which active-minded children will pour out about the age of three to four years is perhaps the best evidence of genuine intellectual curiosity, first as to human motives, then as to events in the material world, and as to animals and plants. The more intelligent children ask repeatedly, 'Why do you do that?' 'What is that for?' 'What makes the rain come?' 'Why do the clouds move?', and so on. My boy B even achieved a question about his own behaviour at three years — 'Why me cry?' he asked and supplied his own answer. A little girl of four-and-a-half asked, 'Why is the hot-water bottle cold in the morning? Does the heat go into me?' 'Yes.' 'Then why am I not as hot as the bottle was?'¹ It is as though thinking and wondering must go on of itself, as though it, too, is a primitive urge. Indeed, one psychologist, at least, has proclaimed thinking to be itself as 'original and independent' an innate tendency as the tendency to run away from danger.²

Interests shown by questions. The spontaneous questions of young children give us some clue to their interests. In one inquiry in a Junior School among 64 boys and 120 girls between the ages of seven and eleven all the spontaneous questions were noted over a period of three years, excluding questions about an object present at the moment.³ When the results were ana-

¹ The earliest beginnings of these 'why' questions are traced in my *Psychology of Early Childhood*, 3rd edit., p. 437. In one record of a boy from 3;0 to 5;0 it appeared that his curiosity about inanimate things was greater than that about living things. He asked such questions as, 'What makes the sky blue? How does the water get up the pipe? Where does the fire burn things up to?' See 'The Scientific Interests of a Boy in Pre-School Years', by Two Parents, *Forum of Education*, 1928, 6.

² See GRAHAM WALLAS, *The Great Society*, p. 42.

³ See E. B. WARR, *The New Era in the Junior School*, p. 31.

In considering changes with age we must bear in mind that children may become more shy of asking questions as they get older.

lysed for different sexes and ages they revealed that the topics on which the highest percentages of children asked questions were as follows:

About objects in everyday use:

(e.g., How is gas made?, Who made the first wireless?, Who invented books?, etc.)

Boys 9-10, 95%	Girls 32%
" 10-11, 50%	" 11%

About the Universe:

(e.g. About the sun and stars, how the earth moves, what keeps the moon up in the sky, etc.)

Boys 9-10, 90%	Girls 41%
" 10-11, 52%	" 50%

About human origin and destiny:

(not including birth and reproduction), e.g., Where was I before I was born?, Who was the first man?, Where is Heaven?

Boys 9-10, 48%	Girls 50%
" 10-11, —	" 55%

About Natural Phenomena:

(e.g., How does the rainbow come?, How do trees grow?, How does fire burn things?, etc.)

Boys 7-9, 50%	Girls 23%
" 10-11, 40%	" 58%

An extensive inquiry as to subjects about which Senior School children (ages eleven to fourteen) were curious was made by Mr R. Rallison.¹ The children were asked to write down at any time during the next week all the things they would like to know. The questions they said they would like to have answered were then classified first into (*a*) scientific and (*b*) non-scientific subjects. The inquiry covered forty schools in Newcastle-on-Tyne, ninety-seven in remote rural areas in

¹ See 'The Scientific Interests of Senior School Children', *B.J.E.P.*, 1939, 9, and 'The Non-scientific Interests of Senior School Children', *ibid.*, 1943, 13.

Northumberland and a number of smaller towns. These comprised in all 1,659 boys and 1,855 girls.

The first general finding was that boys were far more curious about scientific than about non-scientific topics; with girls it was the opposite. The numbers were as follow:

	No. of questions asked	
	by boys	by girls
Scientific	18,049	9,371
Non-scientific	4,931	12,333

For details as to questions asked and the particular branches of scientific knowledge that the children were most curious about, I must refer readers to Mr Rallison's paper, I have only room for a few further facts.

(1) With both boys and girls (all ages massed together) and in all three districts (city, township, and rural) biological questions are the most frequent. They are equalled indeed only by any other kind in the case of the thirteen-year-old city boys, who were just as curious about electricity and chemistry. On the other hand, a large number of questions of boys of the other age groups also referred especially to electricity and chemistry, and among the girls questions about chemistry were frequent.

(2) The rural boys are proportionately less interested in science, except biology, than are the other boys.

(3) Environment seems to have a much greater influence on the distribution of boys' interests between the non-scientific and scientific fields than it has with girls.

In considering all these results we must bear in mind that the questions asked by pupils, and the special interests in various topics, are likely to depend to some extent upon the particular subjects they are studying in school, and the excellence of the teaching, or the interests of the teachers. But one has only to read details of the questions asked both by the junior children (reported in Warr's inquiry) and by Rallison's school children to see that they are curious about many topics which need not be suggested by subjects they were studying in school, e.g., how the hair grows; how does the wireless work? how is ink made? what are stars? how milk gets inside a cow; how do you see in

a mirror? how does the head ache? how does a Thermos flask work?

As regards the curiosity about topics which could not be classed as scientific, the types of questions most frequently asked about by the boys referred to vocations; with the girls games and physical training came first. I give the list in full.

TABLE I
Children's Questions

Subjects	Percentage of all non-scientific questions	
	Boys	Girls
Ages 11 to 14		
1. Vocations	24.6	14.8
2. Geography	15.6	6.7
3. History	11.6	3.7
4. Games and Physical Training	11.1	29.3
5. General Knowledge	7.0	1.7
6. Crafts	5.2	3.6
7. Recreation	4.0	8.3
8. English	3.5	7.4
9. Mathematics	3.4	2.9
10. Economics	3.0	0.2
11. Art	2.6	3.3
12. Religion	2.5	1.4
13. Language	2.3	6.8
14. Music	1.6	3.3
15. Domestic Activity	0	9.3
16. Needlework	0	6.2
17. Adornment	0	0.3

In these non-scientific questions, no special influence of the varying environments (city and rural) appeared either with the boys or the girls, such as appeared in the scientific interests. One further interesting point is that sex differences appeared in the relatively greater interest of boys in geography, history, and general knowledge, and of girls in English, languages, and recreations. The very small percentages of questions about religion is worth noting.

Why do children ask questions? We have agreed that curiosity is

frequently stimulated by objects that resemble those which normally stimulate innate propensities; but children's questions go far beyond that, and we have to recognize the existence, especially in the more intelligent children, of an urge to understand the inter-connexion of things. The general tendency of the mind to relate things one to another, to link items into a unity, seems indeed to be a fundamental one.¹ In the earliest stages probably what happens is that the child realizes that something is inconsistent with his previous experience and the attitude of wonder is aroused in this way. It is a kind of mental shock after constantly seeing things fall to the earth to find that the ink in a fountain-pen does not drop; or when the child finding that hot tea gets cold if it is left to stand, later discovers that hot tea put into a Thermos flask is still hot at the end of the day.² So far as this is an important factor in producing curiosity, it will be seen that the essential thing for keeping curiosity alive is for the teacher to introduce as often as possible something which appears at first novel or even inconsistent with what the pupil knows already. This clearly cannot be done continuously, so that we must look to other factors to retain interest.

Other factors in determining interest. We have already agreed (Chapter V) that each of the great instinctive propensities includes a tendency to attend to certain kinds of things or situations. Under the urge of hunger, food is supremely interesting; under the influence of sex, interest is concentrated on the sight of (or idea of) some member of the opposite sex. But intellectual interests extend beyond these fundamental things in several ways.

(1) We find those things interesting which are a means of securing an end which is set before us by one of the great propensities. Thus, if a youth is sufficiently keen upon securing a

¹ C. SPEARMAN did much to emphasize this in his book, *The Nature of Intelligence and Principles of Cognition*. We shall refer to it later in the Chapter on Thinking and the Training of Reasoning.

² MR N. ISAACS has expounded in detail this aspect of the mental processes which give rise to 'why' questions, in his Appendix to SUSAN ISAACS' *Intellectual Growth in Young Children*.

particular job which requires as a first qualification the General Certificate, the subjects that are essential will have a certain interest attached to them. Such spread or association of interest seems to vary according to individual capacity. We shall touch on this topic again in the next chapter on Attention and Interest. We find that this practical value of a subject as a means to an end is especially shown in the preference during adolescence for those subjects which have some vocational value.

(2) The powerful propensity of self-assertion leads to an enjoyment of success in any activity, and, consequently, we find that pupils tend to be interested in subjects in which they can see definite results gained. (We have already discussed this in Chapter IV under the relation of conation and satisfaction.) This interest is accentuated where there is competition, and self-assertion is still further gratified by success over others.

With this brief preliminary guide, we may now turn to some inquiries about children's preferences for school subjects which illustrate the points we have just made.

The popularity of various school subjects and the reasons for their being liked or disliked. Several extremely interesting inquiries have been made on this topic. One of the earliest I have already referred to (Chapter XV, p. 190). About 8,000 elementary school pupils (ages seven to fourteen) were asked which subject they liked best, which second best, and so on. Much the most popular subjects were drawing, manual work (including wood and metal work), needlework, embroidery, housewifery, and history; then came reading; and at the bottom of the list were dictation, composition, scripture, recitation, geography, and grammar.

In addition, the pupils were asked to give the reasons why they liked or disliked subjects. The reasons given by the younger pupils were perhaps of little value, but the older pupils would be more reliable. The popularity of some subjects was clearly due to the fact that the children could themselves be active about something, something in which they could get definite results and enjoy some success. Other subjects, such as

history and reading, exemplified the appeal of interest inherent in the subject.

Arithmetic was generally either very high on the list or very low. It was popular with a large number of boys, and disliked by a large number of girls. We shall refer again to the interest in Arithmetic when reporting a later inquiry.

Among the older pupils the vocational value of the subject appeared quite clearly. The important question seemed to be whether the subject was preparing them for their future occupations. This appeared even in some rather striking ways. One boy, who put Scripture at the bottom of the list, said, 'Scripture will be no use to me after I am fourteen,' while another East End boy remarked, 'You can't make a living with Scripture.' Some of the reasons for the craft subjects and silent reading were as follow: 'I like it because I get my own time'; 'I don't get grumbled at all the time'; 'I like doing things without people telling me all the time'.

A second inquiry by Mr J. J. Shakespeare on over 9,000 pupils (ages ten to fourteen) in the County of Worcestershire, I have also already referred to as revealing the great popularity of Handwork, Needlework, and Domestic Science.¹ Here again pupils were asked to give reasons for liking or disliking a subject; and again we find the influence of capacity to 'do' the subject, and the possibility of the pupil's seeing definite results. Mr Shakespeare calculated separately the reports of the brighter ('fast') and duller ('slow') pupils: and over 60 per cent. of the reasons given by the duller pupils for the dislike of a subject 'denote failure to obtain results', a failure often due to lack of the ability needed. 'I dislike Arithmetic,' one boy wrote, 'because although I work sums at home I cannot do them at school. It has been my weakness *from birth*.' He uttered perhaps a profounder truth than he suspected. With the 'slow' pupils Arithmetic was much more unpopular than with the 'fast'; and so were Spelling, History, Poetry, Recitation, and Composition.

From pupils and teachers information was also gained as to which were each pupil's two best and two worst subjects. It

¹ See Chapter XV, p. 190.

was clear that 'achievement' and 'popularity' were closely related, especially at the ages of eleven and twelve.¹

Finally 'in the last years of school-life' the 'utility' of the subject emerges as a reason for liking, as it did in the inquiry by E. O. Lewis. The increase of this source of interest is shown in the following table, in which the figures for the 'Achievement' reasons are also given.

TABLE II
Reasons for Liking School Subjects

Age group	Achievement, %	Utility, %
9 years	23	7
10 years	43	15
11 years	49	10
12 years	33	37
13 years	30	45

It will be seen that the utility interest becomes much more important at ages twelve and thirteen as the prospect of leaving school and earning a living comes into view.

The relative popularity of subjects in Grammar Schools. An extensive inquiry on this topic among over 8,200 pupils in Grammar Schools was made by another of my research students, Mr R. A. Pritchard. The schools numbered forty-seven, of which twenty-one were boys' schools, sixteen girls' schools, and ten were mixed.² The age ranges were from twelve and a half to sixteen. The pupils were assured that their papers would not be seen by their teachers, and were asked not to take into account their feelings towards their teachers.

The orders of popularity were as in Table III. (It will be noted that Botany appears in the girls' list but not in the boys'.)

Before we discuss reasons for liking or disliking subjects some general comments may be made on this inquiry.

(1) The most notable sex differences are the greater popularity of Chemistry with boys, and of French with girls.

¹ See Table IV of Mr Shakespeare's paper, p. 160.

² See Mr PRITCHARD's article, *B.J.I.P.*, 1935, 6, where details of methods of calculating will be found, p. 160.

(2) Though Mathematics is supposedly popular with boys, Algebra and Geometry come nearly bottom of the list – as with girls.

(3) Latin is very unpopular with both.

(4) There are surprisingly few substantial changes in the average popularity of subjects with the increasing ages of the

TABLE III

Order of Popularity of Subjects in Grammar Schools

Boys	Girls
1. Chemistry	1. English
2. English	2. History
3. History	3. French
4. Geography	4. Geography
5. Arithmetic	5. Chemistry
6. French	6. Arithmetic
7. Physics	7. Botany
8. Algebra	8. Algebra
9. Geometry	9. Physics
10. Latin	10. Latin
	11. Geometry

pupils (see Pritchard's table, p. 162). The chief changes are: among the boys, Latin drops from 6th at twelve and a half years to 10th at sixteen; while French rises from 8th to 5th. Among girls, Arithmetic drops from 5th at twelve and a half to 9th at sixteen; while Geography rises from 9th to 5th, and Botany from 8th to 4th.

It is interesting to note that French is much less popular (10th) with boys in mixed schools than it is in boys' schools (5th); and slightly more popular with girls in mixed schools (2nd) than it is in girls' schools (3rd). Is this because the boys dislike being beaten by the girls (who are better on the average in French than are the boys)¹ or that the girls set too high a standard?

(5) In all these orders we must recall that we are dealing with averages. Thus with individual pupils there may be big

¹ This has been shown in School Certificate examination results, see J. M. GROFFER and D. GARADOC JONES, *Secondary School Examination Statistics*, p. 60.

changes in order of preference as the pupil gets older; but these may tend to cancel one another out. Still it is useful to know that on the average this or that subject becomes more or less popular.

(6) Again all these orders refer to subjects as usually taught today in these schools. Changes in method and substance might cause big changes in popularity. For example, one main reason for the dislike of Mathematics is that pupils cannot see the use of it for after life. If the syllabus were so modified as to be essentially related to problems of everyday life (as it is already in some schools) we should bring in a powerful utilitarian interest and aim.¹

Reasons for liking or disliking subjects in Grammar Schools. As we have seen, the main interests in school work are of three types.

(1) The inherent interest of the subject itself: what Mr Pritchard calls 'objective interest'.

(2) The enjoyment of the mental process and in success and attainment, which Mr Pritchard calls either 'proficiency' or 'incapacity' if the attitude is negative. This is substantially equivalent to what Shakespeare labelled 'achievement'.

(3) Utilitarian and especially vocational interest.

We will exemplify these three types of interests and other reasons as they appear in Pritchard's reports in connexion with the various subjects in turn.

'English': Here the inherent interest of the subject is predominant. Very few say they like English because they can "do" it well. Pupils say they are "fond" of reading, of poetry, etc. The utilitarian value, however, is fairly strong. Pupils say that it helps them to speak correctly and will be a preparation for a business career, and for mixing with others. Discussions in debates and speeches were much enjoyed.

"The main objection to English in the earlier years was the dislike of grammar; later come references to the reading of

¹ We shall see in Chapter XXXII some evidence that changes in the content of some school subjects or in methods of teaching them may bring about great changes in the popularity of these subjects in school.

books which are "dry". Some pupils say they dislike English because it is too easy; it is something they "could do themselves".

'History': This also is liked almost entirely because of its interest. It is "exciting" and "thrilling" and affords "variety"; it is "like a long true story of what happened to men and women". One pupil pointedly says, "History makes me forget more or less about school"! After about fourteen, interest centres round the growth of industries and trade. Individual differences appear clearly in reference to History. Some seem to have no interest in the studying of the past; they want to know what is happening now. The "proficiency" reason scarcely appears in connexion with History, either for or against. The main source of objection to History is the learning of dates; 50 per cent. of the reasons against History refer to this. It seems that making pupils write out and learn notes was still practised and cordially disliked.

'Geography': Here again the proficiency reason is almost entirely absent, and the utility value hardly appreciated. The human interest is clearly predominant over the scientific. Pupils are interested in the peoples of the countries studied. At the earlier ages the drawing of maps is often the chief attraction. Geography is disliked most frequently when it does not deal with people, but rather with physical features—climate, etc. It is disliked too when it is mostly learning by heart and "seems a muddle of names". I may remind the reader of what was said earlier about new geographical names being to beginners little more than nonsense syllables.

'Arithmetic': Here the proficiency reason comes to the fore with both boys and girls. The pupil likes the subject because he can do it well rather than because it is interesting; there is an obvious delight in the particular mental activity. The usefulness of Arithmetic in later life, however, is the commonest reason given by boys. One pupil writes, "There is hardly anything to learn and it can be done by just using common-sense." Here probably is a pupil with good "g" and poor rote memory. Nearly all the reasons against Arithmetic

are based on the feeling of incapacity; the pupils find it 'difficult and muddling'; the lack of variety is also often referred to.

'Algebra: Here the attitude is pretty much the same as that towards Arithmetic, that is, the proficiency reason predominates either for or against. The practical value of Algebra appeals more strongly to boys than to girls.

'Geometry: Unlike Arithmetic and Algebra, the interest motive rather than the question of proficiency predominates here. Many find diagrams interesting. Its lack of utility, however, appears in some of the reasons for disliking Geometry. "I do not think it sensible," writes one girl, "to prove things equal when one can see they are equal."

'French: Among girls, interest in the subject is the chief reason for liking it, though a large number mention that French is "useful, especially for travel". Fewer, but still a considerable number, give the proficiency reason. Many girls mention the aesthetic appeal of French. Among boys the utilitarian reason comes first and interest in, and ability for, the subject next in that order. Pupils frequently mention their appreciation of learning to know about a foreign people. The great majority of pupils who put French last on the list do so because they "find it difficult, especially the grammar". There is the frequent statement that really hard work "only results in failure".

'Latin: The attitude here differs notably from that towards French. Ability for Latin is more to the fore as a reason for liking it than is the inherent interest. Similarly, the reasons against Latin refer almost entirely to the difficulty of the language. Thus: "I cannot understand it, however hard I try." "I dread the lesson coming." "I often spend an hour instead of a half on my Latin homework and get more punishment for it than any other work. I shall never be able to understand it, however much I try." Very frequently pupils state that Latin is "a dead language and it is a waste of time to learn it". Caesar and other Latin books are also declared to be dull.

'Physics: Here again "interest" is the predominant factor,

and "proficiency" rarely appears as a positive reason for liking the subject. Surprisingly enough there is little reference to the vocational value of the subject, though its connexion with everyday life is frequently mentioned. Pupils also refer to the interest in carrying out their own experiments and "doing things themselves". Those who put Physics low in the list refer both to lack of interest and of ability, the girls referring much more to lack of interest.

'Chemistry: There seems to be a very general enthusiasm for this subject, especially among boys; the interest of the subject and the love of experimenting being the chief factors. As one boy says, "It is exciting. You never know what is going to happen next." Those who do not like Chemistry refer almost entirely to inability to remember names and formulae. Here again we may suspect a weakness in pure rote memory.

'Botany: The overwhelming reason for liking this subject is the interest in flowers and the countryside, though the interest in experimenting is frequently mentioned. Among the reasons for disliking Botany, that of inability to understand rarely occurs, but a good number dislike the subject because of the large amount of drawing required: again, the lack of a specific ability. Many, however, are clearly not interested in flowers.'

I now give Mr Pritchard's summary of reasons for liking or disliking subjects (his p. 234). By far the commonest refer to (a) interest and (b) proficiency.

"On the negative side, where there is an operation involved, as in the manipulation of figures in Mathematics, and of words in language study, the reasons "against" generally involve lack of "proficiency". When, however, the subject concerned has a "content" value, the reason "against" is usually lack of interest - very few pupils say they do not like English, History, and Geography because they cannot "do" the subjects. The reasons advanced in favour, however, show clearly that interest, when present, is a powerful force and nearly always excludes "proficiency". [Clearly Mr Pritchard here means that "proficiency" is not usually given

as a reason for liking a subject when "interest" is given. In fact, proficiency and interest in a subject are fairly closely correlated. We shall discuss this in the next chapter.] It is only in Arithmetic that the "proficiency" reason has a clear lead; in the other mathematical subjects, interest is a commoner reason in favour, though not by so great a margin as in most other subjects."

"Six points of general appeal have emerged, and may be briefly mentioned.

"The boys and girls in our schools:

- '(a) long for self-activity, as opposed to the type of lesson where the teacher talks all the time;
- '(b) delight to prove things;
- '(c) find great pleasure in discussion and argument;
- '(d) feel the need for variety;
- '(e) want everything, as far as possible, linked up with the life of everyday;
- '(f) above all, look for a human interest wherever possible.'

This last may seem inconsistent with the predominance of scientific questions among boys reported by Mr Rallison. But it should be noted:

- (a) That Rallison's pupils were a younger group (eleven to fourteen) and not selected Grammar School pupils.
- (b) That, even so, Rallison's girls asked far more questions on non-scientific subjects.
- (c) Even among Pritchard's older Secondary School boys Chemistry remained the most popular subject until the age of fifteen and a half, when it gave place to English and Geography; and even with girls, Chemistry was 3rd or 4th up to the age of fourteen.
- (d) Finally, the interest in lessons studied in class is dependent to a great extent on what is put before the pupils by the teachers, or on the books studied - the experiences of men and women described in literature, or the aesthetic appeal of the beauty of language, or the stories of history; while the attitude

of questioning rises more naturally in connexion with the puzzling things of everyday life.

(e) From (d) there follows, as indeed is widely recognized, that the interests of the pupils are greatly affected by the teacher. Though in the inquiry about Grammar School subjects the pupils were asked not to take into account their feelings for their teachers, it could not be assumed that they were entirely uninfluenced by this. Accordingly, Mr Pritchard made two supplementary inquiries, described in the next paragraph.

The teacher's influence on the popularity of his subject. The following questions were asked of 974 of the pupils.

(1) Have you put down as your *best* liked subject a subject which is taught by the teacher you like best?

(2) Have you put down as your *least* liked subject a subject which is taught by the teacher you like least?

The results were as follow:

Best-liked subject taught by best-liked teacher, reported by 249 pupils.

Best-liked subject *not* taught by best-liked teacher, reported by 714 pupils.

Least-liked subject taught by least-liked teacher, reported by 146 pupils.

Least-liked subject *not* taught by least-liked teacher, reported by 828 pupils.

Mr Pritchard concludes, that his results are—

'emphatically against the opinion that the popularity or unpopularity of the teacher is the *main* influence, especially when it is considered even that the answer "yes" does not necessarily mean that the popularity or unpopularity of the teacher definitely influenced the choice. The nature of the subject may have contributed to the decision even in the cases where the affirmative answer was given.'

To this we may add that dislike of, or weakness in, a subject may have led to dislike of the teacher, through frequent admonitions, etc.

On the other hand the liking of the teacher may have prevented some of the subjects from being even lower than they were in the list; and the dislike of the teacher may have prevented subjects being placed higher in many lists. In any case the figures are consistent with the liking of the teacher being a very considerable influence on the liking of the subject.¹

In his second supplementary inquiry Mr Pritchard asked 228 graduate students in University Education Departments to indicate how far they had been influenced in liking or disliking subjects at school by the four factors listed below. The results were as follow:

Reasons for liking the best-liked subject.

- 'The 'nature of the subject' (i.e., interest) was put first by 131.
- Aptitude for the subject was put first by 55.
- Effectiveness of the teaching was put first by 24.
- Liking for the teacher was put first by 18.

Reasons against the subject most disliked. Here the votes were as follow:

Inaptitude for the subject	.	.	.	.	81
Nature of subject (lack of interest)	.	.	.	.	65
Ineffectiveness of the teaching	.	.	.	.	43
Dislike of the teacher	.	.	.	.	33

The feeling for the teacher still comes last, but 'inaptitude' for the subject now surpasses, in its influence, the factor of interest. Together with the reports from the Grammar School pupils these results at least express a warning against the glib statements, so often made, that the personality of the teacher is 'everything' in education. But the findings as to the attitudes towards school subjects do not, of course, reveal the effects of the popularity of the teacher on the wider aspects of social and moral education.

Teachers' estimates of pupils' interests. How wrong teachers may be in their judgements as to their pupils' interests in school

¹ Certainly it can be in some cases, as I shall exemplify in the chapter on *Mobile Class-Groups*, where I deal with changes in these subject preferences during the period seven or eight to thirteen or fourteen years.

subjects is revealed by an inquiry in five schools in Scotland. The pupils numbered 227, and were taking the entrance examination for Secondary Schools. The children were asked to state simply whether they liked a given subject, or disliked it, or were uncertain. The subjects were grouped as below, and the correlations between the pupils' interests, and the teacher's estimates of those interests, were then calculated. They were as follow:¹

Group of subjects	Correlation between pupils' interests and teachers' estimates of their interests
Humanistic	0·26
Realistic	0·46
Practical	0·13

Teachers will no doubt usually tend to think a pupil is most interested in what he does best. Indeed, in the above inquiry the teachers' estimates of interests correlated with the pupils' *attainments* as highly as 0·95. Of course, some children are bound to do very well in any subject, relatively to the other pupils, and though the subject may be disliked even by them. Another subject, say physical exercises, may be loved by all, even those who do badly. All this, however, is quite consistent with the degree of interest having a great influence on the relative performance of the pupils within a given subject.

Reasons for the choice of arts or science subjects in later school life. A fitting supplement to the previous sections is the record of an inquiry made by Burt among 127 University students as to why they chose to specialize in Arts or Science in the last years of Grammar School life.² The decisions, he found, were usually reached about the age of fifteen; and the chief reasons could be classified as follow:

(1) *Intended vocation* (wishes often based on very inadequate grounds): 27 per cent.

(2) *Pupil's achievement as judged by marks* (i.e., decision was reached by the teachers after comparing the pupil's marks in

¹ The inquiry is reported in W. McCLELLAND'S book, *Selection for Secondary Education* (1945), p. 30.

² See *B.J.E.P.*, 1933, 13, p. 139. BURT does not say how many of the students were men or women.

different subjects): 24 per cent. Ability or disability in mathematics is frequently cited as the main factor.

(3) *School's achievements as judged by academic success* (ablest pupils required to take subjects in which successes had hitherto been achieved by others owing to special conditions obtaining at the school — e.g., the skill of a particular master in securing scholarships): 22 per cent.

(4) *School organization* (e.g., need to keep classes for different subjects approximately equal in size): 16 per cent.

(5) *Sentimental reasons* (personal preferences or antagonisms of teacher or pupil, or friendships with another pupil): 11 per cent. (chiefly girls).

Special interests and special abilities. In discussing the liking for the various school subjects, we have been dealing with very complex things. Thus the liking for French may depend on:

(1) an interest in words as such and in their sounds;

(2) a special ability for remembering words;

(3) good general ability, so that the relations between words and sentences and the common ideas underlying the different verbal expressions in two languages are readily grasped;

(4) more utilitarian interests: the value of French for travel or for commerce.

That pleasure which comes from 'achievement' — the consciousness of ability to do well, and of making progress, will clearly depend largely upon such factors as (2) and (3) above. Hence the liking for school studies will to a considerable extent depend upon the general ability of the pupil, and on the particular special abilities he has, including those 'group abilities' we have listed in Chapter III (p. 35).

If the reader will glance at that list again he will see that some of the group abilities found by the psychologists roughly correspond to some of the main divisions of school subjects — linguistic studies, arithmetic, geometry, music, and manual work; while others, e.g., various types of retentiveness, enter into nearly all studies. In view of the incompleteness of our

knowledge of special abilities, and especially of the complexity of sources of interest in a school subject, we cannot at present test a boy and say that he will like Subject A or Subject B the better. But by testing and recording, say, a marked deficiency in special linguistic ability, we can assert that he is very unlikely to enjoy the study of a foreign language, so far as liking depends on progress and achievement. Some specially strong motive, e.g., the prospect of going to France for a holiday, may give a fillip to his interest and work, but it is likely to be only temporary, and will not usually lead to permanent successful study of the language as such.

General ability and special interests. It should be stressed that even special interests depend in many cases also upon general ability. Indeed, all school subjects in which good progress cannot be made without good general ability are in this situation. As Burt points out, if a boy's I.Q. is only 100 it is a waste of time to teach him French grammar or quadratic equations, or the formula for specific gravity.¹

For the young child up to nine or ten indeed, progress in all types of school work is largely dependent on his general ability. So far, then, as his interest depends on his achievement, it will depend chiefly on his general ability. Special verbal abilities begin to show their influence a little at about six or eight and more so at ten. In most pupils, Burt estimates, special arithmetical ability hardly shows its influence until after ten, and 'special manual ability' for most remains 'obscurely in the background at ten; that is as compared with the influence of general ability even in manual work'.²

Indeed, as Burt points out in the article I have just quoted, the types or groups of pupils and their special interests described in the Norwood Report, and suggested there as the basis for allocation to Grammar, Technical, or Modern Schools, are largely, so far as the pupils at the age of selection

¹ *Op. cit.*, *B.J.E.P.*, 13, p. 139.

² See BURT, *op. cit.*, pp. 1, 2, 18. We shall discuss special abilities more fully in Chapter XXIV. In a few cases we may find a very low degree of general ability combined with a very high degree of specific natural or verbal ability, so that some mental defectives seem to do quite well in some types of manual work.

(about eleven) are concerned, groups really dependent for their classification on the amount of *general* ability they possess.

Even the capacities for brilliant performance in Latin at the age of seventeen or eighteen are indicated as reliably by a boy's general performance in all school subjects at the age of thirteen or fourteen as it is by his performance in the first year of his work in that very language itself at thirteen or fourteen.¹ The topic of general and special abilities will be discussed more fully in connexion with selection for appropriate types of education, in Chapters XXIV and XXV.

In this chapter we have been discussing the main bases of interest in school work – fundamental impulses of curiosity, special interests in the particular subject matter of different subjects, the satisfaction that comes from felt progress and achievement which depends on ability for the particular subject, and the interest which depends on knowing that the subject is useful for some future purpose.

We are left, however, with the question – what about the pupils' determination to work at his studies? Does not 'will-power' enter into success in intellectual work? Can a student force himself to study and so make up for inferior ability for, or lack of interest in, the subject? We will discuss these topics in the next chapter.

¹ See C. W. VALENTINE, *Latin: its Place and Value in Education* (1935), p. 126. See also p. 341 of present volume.

CHAPTER XVII

MENTAL WORK, INTEREST, AND ATTENTION

No one, I imagine, doubts that effort, and the will to work, does make a great difference in intellectual achievement: many teachers indeed will be found to ascribe a pupil's success or failure, largely to the fact that he does or does not 'try'. Such general opinions, however, need checking; and in any case they do not offer us evidence as to how far success in school study depends on 'will' and effort, or on ability; and they ignore the question as to how far the will to work itself depends on interest.

In the past, in higher schools such as the old Grammar Schools, there has often been an exaggerated belief in the ability of boys to do well in anything if they really tried. The very ablest pupils can indeed do well in almost everything if they choose, because they have a high degree of general intelligence, which counts most in all subjects at least up to about sixth-form stage. But even at the present day many teachers are unfamiliar with the findings of modern psychological tests in general intelligence and in special abilities, and the extent to which they have revealed great individual differences. Hence lack of progress by a pupil may be too readily ascribed to indifference. I once had brought to me a young delinquent of fourteen, who had been through an ordinary elementary school and done very poor work there. He was reported at school as 'lazy', but I found that he was a mental defective, and never could have done the work of an ordinary elementary school however hard he had tried. Less extreme cases, I fear, are not uncommon.

It is difficult, as we have seen, for the teacher, in observing pupils at work, to detect how far a boy is working because he is interested in the work, or how far he is working because he

wants to get on in life, or for fear of punishment, or through desire to please others, or for other motives. But so far as teachers can judge the attitude to work, and persistence in work, it seems from an extensive inquiry by Dr Mary Ormiston, that this factor is inferior to general intelligence as a determinant of success in the kind of work done in the last years of a Grammar School.¹ General intelligence ('g') was by far the most important contributor to success, except in Art, in which special abilities were most important. The 'character' or 'persistence' factor, showing itself in the 'attitude to work', was second in importance, but much less influential than 'g'. Then came special abilities, such as the capacity to deal with spatial relations, and the verbal factor.

In the examination performance of children of eleven, Miss Ormiston found this 'character factor' varied with the particular subject, playing a greater part in Arithmetic than, for example, in English. This fits in well with what was found in the inquiries reported in our last chapter, namely, that in Arithmetic the achievement motive was more important than interest.

With these findings in mind let us consider more precisely the processes which enter into the attitude to work, and into the deliberate tackling of uninteresting work, including the process of volitional attention.

Mental work and volitional choice. We have seen that where interest is sufficiently great there is no need to make an effort merely to attend — though great effort may be made to solve a problem or understand a passage of prose when the student is sufficiently interested. But suppose interest is slight and yet work has to be done? Let us consider an imaginary case. A boy has some homework to do, but a friend offers to take him to the pictures. Which shall he do? He knows that he ought to stay

¹ See her article 'Scholastic Success - General and Special Abilities', *B.J.E.P.*, 1939, 9, p. 221. I refer to her work again in Chapter XXIV. We may recall the finding by Wren, in his analysis of character, of a general factor he labelled 'w' showing itself in 'perseverance' in the face of obstacles, 'conscientiousness', and 'far-sightedness' (see Chapter XIII, p. 162). In Chapter XXV we shall discuss further the influence of persistence and effort on school progress, including researches which suggest that these qualities may be more important at some stages than Miss Ormiston found in her inquiry about school certificate work.

and do his homework. This problem is one of volitional choice, and is settled in accordance with the strength of the various motives, of the capacity for looking ahead, and of ideals of duty, and so on already discussed in Chapter XIII. Such decisions are, of course, of great importance in determining success not only in school work but also in everyday life. In school they are more important, the more work the pupil has to do away from supervision, and the more independent his work is. Hence we should expect to find, as Dr Ormiston seems to have done, that they are more important in later Grammar School work than they are in the work of the Junior School.

Suppose, in our imaginary case, that the boy decides to stay at home and work. Now if he is really interested in his subject his task is simpler. He will, no doubt, at first keep thinking of the outing he has missed, but gradually his interest in his work will help him to 'concentrate'. If, however, interest is relatively slight he must keep bringing back his mind to his work, trying to force himself to attend to it. In other words, there follows the process psychologists call 'volitional attention'. We must consider this more precisely, and its relation to spontaneous or primary attention.

Spontaneous attention. First I must again warn the student against thinking of attention as a 'faculty' of the mind. The term rather describes an attitude or activity of the mind as a whole. It is, as Stout puts it, conation directed towards a continued or more complete apprehension of some object or idea.

Some things, e.g., a loud noise, or a sudden change in the field of vision compel us to attend; the mere variation of tone or manner in a speech is thus some help in holding attention, but a poor one to rely on. In many cases a hearer attends because something appeals to an instinctive tendency; witness the cat's intense concentration on a slight scratching noise in a dark corner of the room: or a mother's instant attention to the cry of her baby upstairs. In such cases there is 'spontaneous attention': (we should say 'we attend spontaneously', but we can use the noun attention if we bear in mind the warning about the faculty idea). In such spontaneous attention there is no

effort to keep attending – indeed, an effort would be needed by the mother *not* to attend to the cry. This spontaneous attention is the first type, and indeed the only type, to appear in early childhood; hence it is sometimes called '*primary*' attention.

Attention and interest. It is often said that we attend to things that interest us. This does not mean merely that we attend to what is pleasant, for we are often impelled to attend to the unpleasant. Interest is not identical with pleasure; it may be described as the urge to attend plus the accompanying feeling of pleasure or displeasure, or some emotion. Innate tendencies decree that we shall attend to certain things; indeed, it would be fatal to a species if it failed to attend to the signs of danger. Thus there is some truth in the view that things are interesting because we are impelled to attend to them rather than vice versa. We must bear in mind, however, the general tendency we have already recognized (see our Chapter IV), for the mind to turn away from the unpleasant to the pleasant, and this will be very influential where there is no strong active urge to attend to certain kinds of things. Furthermore, if pleasure results from the activity of attending that will tend to back up the original tendency to attend, and so the interest in, say, a group of facts connected with plants, or animals, may grow and become more complex.

The transition to volitional attention. We have seen that the little child's attention is always primary; he attends to something because of some strong impulse to attend to the particular thing; because he is interested in it. How does he pass then to the stage at which he can force himself to attend to something uninteresting?

'1) First he must be capable of attending to ideas. He must be able to look beyond the present objects. As this capacity grows he becomes less enslaved to mere external stimuli. Furthermore, he must be able to think of some end or aim which he wishes to achieve.'

'2) The second essential for volitional attention is to realize that something is a means to a desired aim, as when the child wants to be able to read stories for itself, and realizes that he

must attend to the letter symbols even though they may not in themselves interest him.

(3) If the interest in the more remote end is sufficiently great it seems that interest can eventually become associated with the means, though the means may have been previously uninteresting in itself. For example, two of my boys when they heard that they had a chance of going to France, immediately showed much greater interest in their French studies at school. This transference of interest from the aim to the means sometimes takes place so rapidly that the effort to attend becomes unnecessary. In some cases, of course, beginning the study of French for the sake of foreign travel may reveal in the pupil a *latent interest* of which he had not previously been aware. In this case the interest will remain after the end or purpose is achieved. When the visit to France is over or an examination in French completed we may ask 'Does the interest in French continue?' If it does not we can assume that the temporary interest was simply due to the fact that French was a means to an end.

Where the interest does continue after the first purpose is achieved, it is, I think, impossible to be certain how far this is due to transference of interest, and how far to the revealing of latent capacity for interest. Certainly it is possible for a study begun for a utilitarian end to 'grow' an interest of its own. I have asked many of my students who were experienced teachers in evening classes, whether they have known cases in which pupils have started a subject merely for its vocational value, and then eventually become keenly interested in the subject for its own sake. Such teachers I find unanimous in saying that this occurs.¹

¹ Such transference of interest seems to be the main basis of the development of what G. W. Allport calls 'functional autonomy'. See his book, *Personality*, Chapter VII.

A similar experience also gives us evidence on the question of transfer of interest or became this I have had in the past year or two of an affair unknown to me, and later that I experience an unpleasant feeling which I cannot understand fully. Then I recall that an old friend of mine A whom I like very much has just married B. This is done in a very way. The unpleasant affair connected with B has become associated with

Of course so far as an interest develops in the means, the effort to attend becomes unnecessary. Unfortunately, however, in much school work and in later studies this does not rapidly happen, and the child must constantly keep bringing back his attention to something which does not greatly interest him. In spite of what has been said in this and earlier chapters about the supreme importance of interest in education, we must face the fact that there are some things, e.g., the technique of reading, and some mechanical processes in Arithmetic, or Writing, which are not very interesting, especially to the duller children, and there are times when a deliberate effort to attend is necessary. But we should at least be clear on two points which the past discussion will have brought out. First, we cannot expect a child to be able to pay deliberate volitional attention to anything when he does not appreciate the value of the end; thus, if a child does not really care whether he learns to read or not, volitional attention cannot take place, unless, of course, we supply motives of punishment or reward. If we do attempt to supply a motive through threats of punishment it will clearly not be a pleasant interest which will become associated with the work. The only way in which a threat of punishment may help is when the work, if seriously tried, would appeal to some latent capacity for interest in the child, which can only be brought out if he is compelled to give some attention to it; but as a means of transferring interest from the end to the means the promise of reward is much more likely to be effective than the threat of punishment.¹

Secondly, we cannot expect a child to pay volitional attention to an uninteresting means if he is not convinced that it really is an essential means to the end in view. If a teacher tells

the man A— even when the link B is, for the time being, not in consciousness. This kind of short-cut or unconscious association is of fundamental importance in the development of complexes, as we saw in Chapter X, for example in the case of the man with the platypus complex (p. 127). In the case above, if the memory of B was completely repressed, the unpleasant feeling might remain attached to A, leading me to entertain an irrational dislike of him.

¹ There is experimental evidence that praise has a better effect on the behaviour of children than has reproof. See J. A. McGroarty and A. L. IRION, *The Psychology of Human Learning* (2nd edit., 1971), pp. 217-18.

a boy that he cannot enjoy reading unless he acquires a big vocabulary, or studies the rules of grammar, the boy, remembering his keen enjoyment of the thriller he read the night before, is likely to be sceptical. Thus, to ensure effort, and full attention to an uninteresting means, we must convince our pupils that the means is absolutely essential to the end, as well as that the end is a valuable one.

The means of encouraging volitional attention. Let us return now to our young student who has decided to work instead of going to the pictures. He sits down with a book before him, and obviously he must keep his eyes on the book if he is to give it a chance to evoke some interest. He must shut out as far as he can distracting noises, and he may have to turn his thoughts repeatedly away from the idea of the pictures that he has missed. This process can, of course, go on for some time with fluctuations of attention, even if the book arouses little interest; but much effort and energy is expended in constantly bringing back attention to the book. We cannot, indeed, attend continuously for more than a few seconds to something entirely uninteresting, as shown by the following experiment which the student might profitably try.

Experiment on volitional attention. Take some common object, such as a pen or pencil, and try to concentrate your attention upon it for one minute, getting a friend to tell you when the minute is up. The purpose is to discover the number of times your attention wanders from the object in the course of the minute. Whenever your attention does so wander, indicate it to your partner by the movement of a finger or of a pencil held in the hand. Your partner should count the number of such signs and note it down without telling you, for the present. Try to hold the object itself in mind, simply the object as it is. Do not think things *about* it. The subject should take special care to indicate the slightest fluctuation of attention away from the object. Of course the attention may wander from the object even when the *vision* is still concentrated upon it.

It is found, on the average, that there are four or five fluctuations of attention in the minute; some people report fewer and some many more. Where there are fewer the subject has

usually led himself to think things *about* the pencil, guessing its length, where the wood was made, etc.

If the experimenter were to try to attend to the pencil for thirty minutes instead of one he would no doubt complain of boredom or fatigue, and eventually the experiment would become intolerable. Fortunately a student working at his subject is not in such a hopeless position. He has at least something to occupy his mind with, and often some activities, e.g., looking up words in a dictionary, or making notes, may relieve monotony and make him feel that some progress is being made. Clearly, however, it will be a saving of effort and of time if the student does not need to keep forcing his attention back to his work. Conflict is both unpleasant and exhausting, as we saw in our discussion of unconscious processes. Indeed, the statement that keen interest facilitates learning may seem to the reader such an obvious platitude that it does not need arguing about. But we have to bear in mind that many teachers have actually advocated the prescription of hard and dull studies on the ground that they 'cultivate the powers of attention', and teach a boy to stick at an unpleasant job and so on. Let us consider this view.

The doctrine of 'grind' and the supposed 'training' of volitional attention. We may admit readily that a man should be prepared, if necessary, to tackle an unpleasant job, and that a student should be ready to work at an uninteresting part of a subject if it is essential for his main purpose. But as we have seen, whether he applies himself to such work is, in the first instance, a question of adequate motive and of volitional choice. That settles whether at least he shall sit down to his work for a start. Now whether he proceeds to work effectively depends largely upon the interest that he finds developing in his work; if it does not develop he wastes time through fluctuating thoughts and wastes effort in forcing himself to attend.

Is this process of forcing made easier through having been made frequently in the past? The belief that it is thus made easier is based on the idea that there is a 'faculty' of attention strengthened by exercise. Psychologists would, I think, be unanimous in scouting this idea: and most would also say that

the pupil is only likely to attend more willingly if developing interest is added to the more remote motives to attend. But suppose we take a more cautious view. We may surmise that forced attention to uninteresting work, *so far as it leads to success and satisfaction*, may lead the student to face other uninteresting tasks in a better spirit, and with more determination. But we must note the condition stated 'so far as it leads to success and satisfaction'; we have no reason to suppose that effort expended in vain will make a pupil more disposed to effort later on. Indeed, if we claim that successful effort facilitates future efforts because of its success we must be prepared for the corollary that unsuccessful effort is actually likely to *discourage* future efforts.

If this argument be sound then —

'the error of the old pedagogy lay in supposing that *all* drudgery gave a mental training, and that all acts of attention trained some power of volitional attention. If, after prolonged effort, when "the hours of light return", we fail to see anything of value accomplished, there is no encouragement for future efforts. We adults and even some pupils may be far-sighted, and able to "catch the far-off interest of tears"; but we cannot expect that of most children. The misfortune of much education is that children never do see that their drudgery has been worth while. No doubt it often needs time to arouse interest in a given subject, and occasional pressure now may result in interest and spontaneous work later. The mistake of some teachers and of some schemes of education is to be content with "much later" or "never".'¹

All this is not an argument for letting a child always do what he pleases. It is not even an argument for making school studies largely a form of entertainment. It is rather a further argument for a careful adjustment of work to the individual so that the motive of felt achievement should be enlisted in working at subjects which have not for him an inherent interest. That means that the work shall be sufficiently within his

¹ Quoted from the preface to a teacher's book, *Latin in Pupil and Teacher* (London, 1915), Chapter I, where a further discussion of the topic with special reference to Latin will be found.

powers to make constant progress possible – progress which he can see; though it should be just difficult enough to stimulate effort. We may recall here the section on the stimulation of conation by not too difficult obstacles and the references by some pupils in Mr R. A. Pritchard's inquiry to the enjoyment of tackling difficult problems, and the fact that pupils who liked Arithmetic and some other subjects did so chiefly because they could 'do' them satisfactorily.

Genius and concentration. Some readers may be thinking 'but have not our great scholars or creative geniuses achieved their great success through their powers of concentration'? Here I cannot do better than quote some of William James's comments on this question.

'Geniuses [he writes] are commonly believed to excel other men in their power of sustained attention. In most of them it is to be feared, the so-called "power" is of the passive sort. Their ideas coruscate, every subject branches infinitely before their fertile minds, and so for hours they may be rapt. *But it is their genius making them attentive, not their attention making geniuses of them.* And, when we come down to the root of the matter, we see that they differ from ordinary men less in the character of their attention than in the nature of the objects upon which it is successively bestowed.'¹

Few men, however, and fewer children show such absorbed interest in intellectual studies; and, though we have seen

¹ *Principles of Psychology*, Vol. I, p. 423. JAMES quotes (p. 419) from SIR W. HAMILTON'S *Mechanics* examples of geniuses who have been so absorbed in their interests as to be indifferent to what was going on around them. Archimedes, it is well known, was so absorbed in geometrical meditation that he was first aware of the storming of Syracuse by his own death-wound, and his exclamation on the entrance of the Roman soldiers was: *Noli turbare circulos meos* ('I don't disturb my circles'). It is reported of Newton that, while engaged in his mathematical researches, he sometimes forgot to dine. 'On the day of his marriage the great Budaeus forgot everything in his philosophical speculations, and he was only awakened to the affairs of the external world by a tap on the back from the marriage-party, who found him absorbed in the composition of his *Geometriae*'.

In such cases it is impossible to suppose that these thinkers were forcing their attention to the uninteresting. I hope the cynic will not apply the doctrine of inaction and repression of the unpleasant to the story of Budaeus forgetting his marriage.)

that interest affords much the soundest basis for efficiently maintaining work, we must not despise further incentives for the more routine type of school work, which have little interest appeal. We will touch on some of these in the next paragraph.

Further incentives to mental work. As we have already seen, one thing which encourages the pupil to work is his perception that he is making progress. For example, in one school it was found by actual experiment that (as no doubt has often been observed) a great impetus was given to work in Arithmetic, Spelling, etc., by having tests every month of which the results were announced and the pupils encouraged to try to beat their previous records.¹ Here there was both competition with others and self-competition. There is clear evidence that pupils think success in a test a much greater incentive than most teachers think it. (See our note on Incentives in School, p. 534.)

We have seen in the previous chapter that the realization of achievement is a powerful motive, and obviously that could not function properly if the pupil does not see clear signs of progress. This is a main reason for not prescribing work which is beyond the capacity of the pupil. I remember with regret that in my early teaching days, untrained as I was and without any study of the principles of teaching or of psychology, I made the great error, following (as a young teacher is apt to do) the custom of the school where I had been as a boy, of thinking that the harder I made the work, the greater would be the stimulus to the pupils. Consequently their French exercises, when returned to them, were apt to be a mass of red ink corrections, and the sums prescribed for homework were, in the majority of cases, done wrongly.

From the point of view of this motive of achievement any set of tasks should be such that the weakest pupils can do most of them correctly, so graded that the hardest of the tests can be achieved only by the ablest pupils with some effort. The value of a just attainable goal is aptly put by Woodworth: 'You cannot jump so high in the empty air as you can to clear a bar, and; to secure your very best endeavour, the bar must not be so low

¹ STARCH, *Educational Psychology* (1919), p. 164.

that you can clear it easily, nor so high that you cannot clear it at all.'¹

We see here too a further argument in favour of individual studies which we have advocated in discussing the Dalton scheme. We can see also a reason for not setting the goal aimed at too far ahead. To quote Woodworth again: 'The goal that can be reached by immediate action enlists more present effort. 'If the ultimate goal is a distant one there must be landmarks along the way to strive for as immediate goals.' 'The student puts more energy into his study when the examination is close at hand.'

Mental fatigue and boredom. Not only does volitional attention to the uninteresting involve conflict and a wastage of energy, but interest seems to afford a positive supply of 'energy'.² It is true that modern experimental psychology suggests that what is apparently mental fatigue is usually merely boredom; for example, it is a familiar experience for a student, tired as he seems at working at something uninteresting, to have, apparently, a sudden release of energy when he turns to some vitally interesting subject. The question of mental fatigue is complicated by the fact that eye-strain and sometimes muscular fatigue, may be involved, as, for example, when a man does much writing while working. But apart from such complications, psychologists now tend to the view that there is little or no mental fatigue so long as interest remains lively.

Keen interest indeed seems at times not only to supply 'energy' (or capacity) to continue work, but to raise the mind for a moment to a higher level of efficiency than its usual level. Thus in my observations on the development of young children I frequently noted that at a moment of keen, spontaneous interest a child rose to a level of intellectual efficiency which he seemed unable to reach in a formal test. For example, when the idea 'two' was just dawning in the mind of a child he would use the word correctly if he suddenly saw two horses (which he

¹ R. S. WOODWORTH, *Psychology, A Study of Mental Life* (1940), pp. 399-400.

² Perhaps one should say rather 'a positive supply of capacity for work', to avoid implications as to 'brain energy' and difficult problems of modern physiology of the brain. The rest of this paragraph will make the point clearer, I hope.

loved), but would fail completely if asked to say how many fingers I was holding up.¹

What appears as mental fatigue is often really boredom -- a feeling of indifference due to the drying up of the emotional or interest source of energy, or in its most marked form a feeling allied to disgust which makes it almost impossible for the work to continue. Even neurasthenics, who are often thought to be especially deficient in 'nervous energy', probably really suffer from lack of, or inhibition of, interest in mental or physical work.²

Interest, then, seems to be the source of some form of 'energy' or 'capacity' for work, and so long as interest remains, fatigue due merely to mental work seems exceedingly slight, and usually is really physical fatigue. Indeed, leading authorities on 'nervous breakdowns', to use the popular term, now hold that a breakdown is very rarely due merely to overwork, but is mainly dependent on emotional conflict.³ Of course, if a man allows his work to interfere with adequate sleep or exercise or time for meals, then these may cause a breakdown in health.

There seem to be similar reasons for doubt whether children can really overwork, or 'over-tax their brains', as parents sometimes fear, so long as they are keenly interested in their work, and provided the conditions of physical health -- sleep, exercise, and time for meals -- are ensured. We must recognize, however, that prolonged working at any one kind of work, although it may be interesting at first, does eventually tend to produce boredom, especially in the more routine kind of work, in which new points of interest are not continuously emerging. The child becomes 'tired of it' if not genuinely tired through it. If we bear this distinction in mind there is no harm in continuing to talk of mental fatigue, though this is really 'reduced capacity' for continuing the *same* work and not necessarily re-

¹ See my *Psychology of Early Childhood*, Chapter XXII.

² See Berg's *Symptom and Method*, pp. 226 ff., where the student will find an illuminating discussion of mental fatigue and boredom interpreted as primarily a form of disgust.

³ See D. K. HENDERSON and R. D. GUILDFORD, *A Text Book of Psychiatry* (5th edit., London, 1941), p. 64.

duced capacity for *any* kind of mental work, provided a new interest is present. Some characteristic effects of boredom and apparent fatigue in certain kinds of mental work appear in some experiments which will be described in the next paragraph.

Experiments on mental work and fatigue. Experiments on mental fatigue have usually been made with routine kinds of work, such as crossing out as rapidly as possible all the vowels in a page of print. One method particularly useful is Kraepelin's multiplication test. In this, long, vertical columns of figures are provided such as the one printed here. The subject of the experiment has to proceed as follows:

7 He multiplies the 7 by the 2 - getting 14. Taking the 4
2 only, he multiplies it by the 9 below getting 36. Again
9 taking the 6 only, he multiplies it by the 7 below
7(2) making 42. Now opposite the 7 he puts 2 (as shown
3(8) in brackets). He goes back to the second figure (2) and
8 multiplies the 2 by the 9 and proceeds as before. This
7 procedure gives a considerable amount of mental work
9 with little physical work in writing.

In such experiments it is found that the first signs of apparent fatigue are an increase in errors rather than a decrease in the amount of work done. The subject's efforts keep his pace about the same, but the accuracy is reduced. A similar result has been shown in dictation tests given at the beginning of afternoon school and at the end of afternoon school, an increase of about 30 per cent. in 'slips' being shown.

Various experiments have been made to discover the amount of fatigue at different times of the school day, or due to different subjects. But we have no grounds for generalization, for so much depends on the interest roused. It is, however, generally agreed that the younger the child, the shorter should be the periods of enforced work. Also, experiments suggest that vigorous physical exercises are not necessarily merely recreation.

Other experiments have shown that the feeling of fatigue is not always an accurate clue to the actual fitness of the individual for mental work. As we have indicated, it is likely to be

really boredom. A man may feel mentally tired before he begins some mental work and then find that he actually feels fresher after working some time.

Experiments on mental work and distraction. We have seen that when the spontaneous interest is strong enough mental work can be carried on efficiently under what seem very distracting conditions. Entertaining experiments have been tried on students doing intelligence tests with distracting noises (bells, whistles, and music), or with people moving about or spotlight flashing on the walls. The results showed surprisingly little effects of the distractions, the students being really intent on doing equally well under the bad conditions. In other experiments, when dance music was played while mathematical work was done, it was found that, if the students were led to believe that it would disturb them, their work suffered; if, however, they were led to believe that the music would be a help they worked slightly better. When, however, the distractions are made more interesting in themselves — e.g., humorous anecdotes or beautiful music, there is much more interruption with work.¹

Other experiments have shown that not only may a subject become accustomed to a regular interruption but also that it may even prove a stimulus to greater concentration. Work is more apt to be disturbed when the disturbance is irregular and when it appeals to the same sense as that required for the work in hand, e.g., if other persons are *speaking* when a pupil is trying to attend to what a teacher is *saying*; or if visual distractions occur when he is looking at a blackboard or map.

The worker's attitude to the distractions seems then an important point. While I am reading in a bus I am not distracted by conversation, in reasonably quiet tones, by strangers. If, however, I am in a room with a friend who has promised to be quiet while I get some difficult work finished, then if he forgets and makes a noise I am distracted not so much by the noise, as

¹ The above-mentioned experiments are more fully described by R. S. Woodworth in his *Principles of Mental Life* (1911), ch. 11, pp. 32–30. Other results are given by C. S. Myers and E. C. Bartlett in *A Text Book of Experimental Psychology* in the chapter on Attention.

by the thought of his indifference. Similarly, worries about other affairs, or interesting recent events or exciting events soon to come, are great distractors, especially for the young – a fact which has a bearing on the question of too frequent exciting entertainments for the student. The girl who is taking a leading part in the school play can hardly be expected to concentrate much on her school work in the week or two before the performance. It may well be worthwhile, of course, even from an educational point of view; but it is a fact that has to be borne in mind in balancing the pros and cons.

Among internal distractions must be included day-dreaming. The habitual day-dreamer is likely to be inattentive to the work on hand, which suffers so much that he may often be regarded as a dunce when, as Burt points out, he is really 'suffering not so much from an intellectual as from an emotional disturbance'.¹

¹ *The Backward Child*, p. 479.

CHAPTER XVIII

THE SPAN AND DIVISION OF ATTENTION OR APPREHENSION

The focus of attention. If we consider our field of vision at any moment, e.g., when we are looking attentively at a map on the wall, we find that a certain thing, say a river mouth, is in the focus of vision and seen clearly. The edges of the map are less clear though they are in the near margin. Still less clear are the objects vaguely visible through a window at the side of the room. While we keep one eye on the map we may not be able to tell what an object on the other side of the window may be, though we should detect if it moved.

So we have a clear focus of vision, a near margin less clear, and a wider background still more vague.

Somewhat similar are the focus and range of attention. Let the student consider his present moment of consciousness. As he reads this book the word he is reading at the moment (with its meaning) is most directly attended to and is clearest in consciousness; or more likely it may be several words forming a group and expressing one idea.

In the near margin of attention are the words (and their meanings) which have just previously been read. These provide the setting for the words being read at the present moment, and give him the clue to their meaning. In the near margin there may also be dawning suggestions as to ideas about to be expressed in succeeding words.

In a more remote margin or background are sensations of pressure of the arm on the table, or the warmth of a fire, or the ticking of a clock. These are not directly attended to; yet that they form an element in consciousness, as is shown by the fact that if a sudden change occurs, e.g., if the clock stops, the student will notice it.

Or again consider the act of writing a letter. One well prac-

tised in handwriting is able to keep in the focus of attention the thoughts which he wishes to express. The art of writing, and even the spelling of the words, can be relegated mostly to the near margin of attention; and the writing seems to run on almost mechanically and with the correct spelling, till some relatively novel word requires attention to be focused on it for a moment.

The range of attention or span of apprehension. We can attend primarily to a thought while giving a place only in the margin of attention to the actual words we are reading or speaking. But can we attend at the same time to several things which need to be each in the focus of attention?

This question is put sometimes in the simpler form: *to how many things can we attend at once?* The answer depends on what we regard as a 'separate thing'. For example, a group of dots arranged thus:



can easily be attended to in one instant, as a representation of that constellation of stars called the Plough or Charles's Wain. But in this way they really form a unity and are one thing. If the constellation is not familiar to the observer and the dots are flashed for one-fifth of a second on a screen, he will find that he cannot attend to all the dots merely as separate dots at the same moment. Similarly, we cannot attend to all the letters r t h i a c s m s together: but we can when they form the familiar group 'Christmas'.¹ Some such grouping of objects

¹ The reader can easily try this experiment by writing the letters arranged haphazardly on one large piece of paper and the word Christmas on another. Then he should show a friend the first paper for the shortest possible time and ask him to write down the letters he saw; then he should show him the word **Christmas**.

It may be mentioned that even when an irregular set of dots is presented to a person, he may tend to group them mentally into some form or design. This tends constantly to reveal such a tendency to organize or integrate impressions into wholes, a point emphasized by the Gestalt-psychologists (see Index and my *Introduction to Experimental Psychology*, 5th edit., 1953, Chapter 17).

into a unity, when there are many, is essential to their ready apprehension, and to the holding of them at once in the focus of attention. The value of grouping for the quick apprehension of a number of units is well shown by experiments on the range of visual attention.

Experiments with the Tachistoscope. By means of an instrument called the Tachistoscope a group of dots or letters can be flashed on a screen for a mere fraction of a second – as small as one-fiftieth – in which there is no time for the eye to move. It is found that with most persons the greatest number of entirely disconnected letters which can be thus apprehended may be only four or five. When the letters are grouped into nonsense syllables thus, bendorlik, as many as ten letters may be apprehended at once, and recalled afterwards, while twenty or thirty letters can be taken in if they form a familiar word or phrase. Grouping and familiarity are even more important in determining the results than are individual differences of capacity in range of visual attention, though these are considerable, some persons being able to apprehend twice as many disconnected letters as others apparently even without any grouping.

Individual differences in the span of apprehension. Professor Burt made many experiments on children with a simple lantern tachistoscope showing irregular groups of dots, the children being told to put down on paper the correct number of dots arranged as they were on the slide. He found great individual differences:

'One child can observe no more than five or six dots at once, and then only when they are arranged in some simple scheme, like the pips on a die or a domino. Another may be able to reproduce a dozen dots, however irregularly the pattern be composed. More complex material may be obtained by using letters or figures. The same wide differences will be observed. When a row of letters or a set of figures is thrown upon the sheet, some will be able to write down only four or five; others nine or ten.'¹

¹ C. BURT, *The Backward Child*, p. 160.

The importance of grouping is also shown in the experiments to discover the result of practice in the range of visual attention. It is found that little improvement is made, when once the method and apparatus are familiar – and that so far as improvement does take place it seems to be due to increased facility in grouping objects seen.

These experiments, then, do not prove a capacity to carry on really distinct and separate mental functions at the same time. When a man appears to be able to engage in several really distinct activities at once – as when Napoleon dictated several letters at once, or when a man writes a letter and dictates another at the same time – it will be found that what really happens is a rapid fluctuation of attention from one thing to another. To be able to do this is often useful. It means partly that the relevant ideas needed to write letter (*a*) can be called up rapidly immediately after (*c*), (*d*), and (*e*) have been in mind: and this implies that the ideas required for (*a*), (*b*), and the other letters are very clearly grasped, very closely connected and organized and thought out, and hence very well remembered.

Probably we cannot entirely explain such special ability in this way: we must, I think, assume great differences between individuals in the capacity to hold several ideas in or near the focus of attention at once, or in the speed of relevant associations and the extent of guidance of associations by the problem at hand. We need not suppose that some men could hold several entirely discrete ideas in the very focus of attention at the same time: but rather that they have a very active near margin of the focus, which holds the next item ready, so to speak, for action.

All this has a bearing on the psychology of thought. For some men it seems to be necessary for a very full expression of a thought to be present in mind for it to function efficiently; in others an element or aspect will do, and these latter persons may therefore be able to keep elements of several thoughts in the near margin, while the average man can only keep one.

The grouping of successive impressions. The capacity to group is equally important when we are attending to a number of succeeding impressions, especially musical notes or spoken words.

Of course, we are not attending to all the items in such a series at once in the fullest sense; and yet there is a sense in which the first words of a sentence are kept in mind when the last are being heard: they are in the near margin of focus and influencing our understanding of the words in the focus. Experiment shows that when a series of noises made by tapping are grouped and sub-grouped a very large number can be apprehended and as a unity, and in a sense attended to together. Thus such a series of beats as this:



can easily be repeated after once hearing by anyone fairly sensitive to rhythm. (The longer lines indicate an emphasized beat.)

Some primitive tribes have such complicated rhythms in their drum music that the European-trained ear cannot follow them: familiarity enables the native to group the various impressions.¹

The power of grouping and unifying (both things seen and heard) of which we have been speaking depends largely upon experience with the given material: thus familiarity with designs or geometrical figures will enable a man to group straight lines to some extent even when arranged haphazardly. The same principle is obviously of great importance in reference to the understanding of series of words, either spoken or written, expressing ideas. When we are quite familiar with the subject matter and especially when we are thoroughly familiar with the normal forms of sentences and the significance of the position of words, long sentences rapidly spoken (or read) can be understood with ease. When, however, the speaker or writer uses unusual arrangements and deals with matter unfamiliar to us, a long rapidly spoken sentence leaves us dazed.

In the case of the little child, even when the words spoken to him are not beyond his understanding, he is often not very familiar with the substance matter or at home with the form of

¹ See G. S. MYERS, 'A Study of Rhythm in Primitive Music', *Brit. Jour. of Psych.*, 1. This topic of rhythm is dealt with more fully in Chapter XXIX on Music.

language. The greater part of the words and their meanings cannot be dealt with in the near margin of attention, as can be done by the adult; hence he cannot take in a large group of words as a unity by rapidly absorbing only the essential aspect of them. The words can only be apprehended in small groups and each group attended to separately; so the child's apprehension seems to us slow, and hence partly the little child's delight in stories in which there is frequent repetition of ideas or words, as in the repetition of the same story. The words and ideas being familiar, he can then give himself up entirely to relishing the interesting events recounted.

In writing a letter I can attend primarily to thoughts and meanings, because I have become so familiar with the mechanism of writing: giving careful attention to the central core of thought I can leave the mechanism of writing to run by itself, even when only in the margin of consciousness. With a little child it would be otherwise. In writing a letter or essay he must attend quite as carefully to the writing and spelling as to 'what he is going to say': so they have to alternate in consciousness. He seems to have a narrower scope of attention than the adult who seems to be able to keep several things going at once; but it is chiefly due to the fact that the adult has become so familiar with certain activities (e.g., the act of writing) that they run on with little attention, leaving the focus free for something else.

Some applications in teaching. The above paragraphs on the span of apprehension, the focus of attention, and the necessity for the familiarity with the items grouped, have a bearing upon problems of teaching. The most obvious one is that we must adapt to the mental level of the child both the words and their grouping into sentences. As soon as we introduce difficult words or long and complicated sentences there is the danger that the child's attention will be deflected from the ideas we wish to convey to the words themselves and to the business of grasping the relation between the sentences. Furthermore, in the exposition of, say, History or English Literature, unless the preceding sentences, whether heard or read, are very familiar and readily grasped, and their meaning retained at least in the margin of

attention, the child has to keep going back in thought (or in his reading) in order to interpret the sentences being heard (or read) at the moment.

The fact that the span of attention is limited applies more widely. Thus, in the teaching of Arithmetic, when a new rule has to be introduced it should first be demonstrated with only small numbers and practised with small numbers; otherwise the child's attention is too much absorbed with cumbersome figures and he cannot think primarily of the new rule. Similarly, it is useless to attempt to explain Stocks and Shares if the pupil is still hazy about percentages. His attention will be constantly diverted into thinking about the latter. I found in teaching Arithmetic to very young children that in first studying the method of multiplication, the child would grasp the method and get the sums right if he was only required to multiply by say three or four; but if he was asked to do the multiplication by seven or eight when he was still shaky on the seven and eight times tables he would not only make mistakes because he did not know the tables but his grasp of the method of procedure in multiplying would also often lapse.¹

Similarly, in the teaching of a foreign language a new construction or rule should first be illustrated and first practised with very familiar words. If a child's attention is half absorbed by wondering what are the parts of an irregular verb he cannot so easily concentrate on deciding what tense he should use. This point is ignored in many text-books in French, German, and Latin. Almost invariably when a new rule is introduced the exercise upon it is made the very occasion for introducing new words.

¹ See also W. SCOTT, *J. Exp. Ped.*, 4, No. 3. Scott studied types of errors in arithmetic and found that when one type of difficulty occurred another kind of 'slip' was likely to occur also.

CHAPTER XIX

LEARNING AND REMEMBERING

The term learning can be applied to: (1) the learning of verbal or any sensory material, e.g., the succession of sounds in a tune; and (2) the learning of muscular skills, such as typewriting or driving a golf ball. We shall consider these separately, though as we shall see there are some resemblances between them.

Retentiveness and recognition. If when a child has seen or heard anything, no trace of that impression remained in the mind (or brain) obviously he would learn nothing. Retentiveness is essential for all learning, whether of verbal material or of skills. Anything which rouses attention leaves some impression, and the greater the interest roused, the stronger the trace left behind. Retention may be enough for recognition but not for actual recall. Thus suppose we are told the name of someone. We may not be able next day to recall the name, yet the impression remaining may be enough for us to recognize the name if it is shown us in the midst of a dozen other names. Experiments show that if we learn (incompletely) a dozen nonsense syllables it is easier to recognize them in a long list of such syllables than it is to recall them.

Interest and retention. As we remarked in an earlier chapter, interest is a decisive factor in determining whether something heard or seen can afterwards be reproduced, as in the case of the boy remembering the names of captains of football teams. Yet nonsense syllables presented for the first time to a man may interest him greatly for a moment because of their novelty or absurdity. Nevertheless, if he reads a series of a dozen nonsense syllables and then reads a series of twelve familiar names, such as London, Dickens, Easter, Churchill, these names will be found far easier to recall. They have each of them a content of meaning: they make, so to speak, wider, more massive impressions on the mind. In some cases, for example, if the man has

seen London or Churchill, a vivid image may be called up and facilitate retention and recall. The teacher should reflect that to give the pupil a list, say, of rivers or of capitals of countries to learn, if the child knows nothing whatever about these rivers or cities, is only equivalent to giving him a list of nonsense syllables to learn, as we pointed out in Chapter II.

Of course, the concentration of attention on things which are not interesting, and the efforts to learn them, do make a great difference. Here, for once, experiment confirms popular opinion. The mere reading over to others of lists of nonsense syllables without an effort oneself to remember them results in little being retained.¹ That, too, has a suggestive bearing on the old-fashioned method, still adopted, I fear, in some schools, of making children repeat in chorus after the teacher, lists of names, etc.

Immediate and prolonged memory. In Chapter II we pointed out the distinction between logical (or substance) memory and rote-memory; and then again between rote-visual memory and rote-auditory memory, and so on. There is another important distinction between what are conveniently called (*a*) immediate memory and (*b*) prolonged memory. If we test a class of children immediately after they have learned a set of dates or a poem and then test them a week or so later we do not find the orders of merit are the same for the immediate recall and the later recall. Immediate memory may be tested by a series of figures or words such as are used in the Binet type of tests. For example:

2	6	4				
3	8	2	5			
9	7	4	8	6		
1	5	7	9	3	4	
2	8	7	1	9	5	3

It is found that the reproduction of four numbers read out to the child (at the rate of one per second) proves to be a fair test for the average five-year-old pupils; six numbers for the nine-year-old; seven numbers at the age of eleven and twelve.

¹ See M. Smith and W. McDougall, *B.J.P.*, 10.

This itself is not a *general* test of immediate rote-memory; as we saw before, the performance is different for different individuals according to whether the numbers are seen or heard, and different results are obtained if nonsense syllables are used instead of numbers. The test serves, however, to illustrate what we mean by immediate rote or mechanical memory; whereas an attempt to repeat the numbers learnt or read a week earlier exemplifies 'prolonged' or what Burt calls 'long-distance' memory.

Burt found that if a child's short-distance (immediate) memory is poor, his long-distance memory is also weak, but the converse does not hold. 'A child's memory may fail to last over long intervals of time, but he may manage quite well in a short-distance test which demands nothing but an immediate echo on the spot.'¹

The Binet tests also included short sentences which have to be repeated. Thus sentences of sixteen syllables were found a suitable test for six years; for example, 'I wish I was out in a field with a jolly dog to play with.' A sentence of twenty-six syllables was found suitable for the age of fourteen. These afford us some test of immediate 'substance' or 'logical' memory, although not completely so. They partly depend on rote-memory. Thus there is no reason, or very little, why the word 'jolly' should not be replaced by the word 'nice'. The meaning is substantially the same for the child. The reproduction of a short story also affords a rough test of either immediate or prolonged substance-memory, but performance in such tests depends, first, on the special interest of the individual in the particular subject matter, and second, to a very large extent upon general intelligence. The correlation with estimated intelligence is indeed as high as about 0·7, so that mere retentiveness is a relatively unimportant factor.² On the other hand, mechanical immediate memory only correlates with general intelligence to the extent of 0·4. As Burt points out, the pupil who scores satisfactorily in special tests of memory (immediate or distance) may sometimes be reported by teachers as having 'no

¹ C. BURT, *The Backward Child*, p. 500.

² *Op. cit.*, p. 501.

memory'. In such cases the weakness lies really in lack of interest and concentration, and is especially frequent in children who are emotionally unstable.

Individual differences in retention. We find great individual differences in retention and immediate memory, similar to those we reported about general intelligence (Chapter III, p. 40). Thus among a thousand children of the age of six, while the majority would be able to reproduce five numbers read out to them, some children would only be able to reproduce three, while some would reproduce six. In repeating sentences we find that, while most six-year-olds can reproduce a simple sentence of sixteen syllables, some can only manage ten or less, while some can reproduce eighteen or twenty. Again in a group of students it was found that a series of eight nonsense syllables could be learnt by the fastest learner in eight repetitions, whereas the slowest learner took thirty-seven.¹ There is also clear evidence that, contrary to the commonly-held view, quick learners are *not* quick forgetters.²

The rate of forgetting. When some material, nonsense syllables, lists of words, poetry, etc., has been learnt and the learner tested for retention some hours or days later it is found that there is a very rapid loss of retention at first, and later only a gradual further decline. The curve of forgetting, as it is called, is somewhat like that given in Figure 4, varying with the kind of material. Material with meaning (e.g., a list of words), is much more slowly forgotten; with such 'logical' or at least connected material as poetry, the decay of memory is still slower.

From this we conclude that the first revision should come fairly soon after learning, if the facts are not to be lost. The ideal would be to revise material learnt just when it is beginning to fade; thus for a poem the first revision might be after an interval of half a day, then a day, then several days, and so on.

¹ See E. G. BORING, H. S. LANGFELD, and H. P. WELD, *Psychology: A Factual Text-book* (1935), p. 318, or new edition under the title *Foundations of Psychology* (1948), p. 154.

² See J. A. McGEUCH and A. L. IRION, *The Psychology of Human Learning* (1952), p. 375.

There is little doubt that much that is learnt during the school career is unnecessarily lost through lack of adequate and distributed revision. Some subjects, of course, e.g., a foreign language and the English language itself, involve necessarily repeated recurrence of the most important material in these

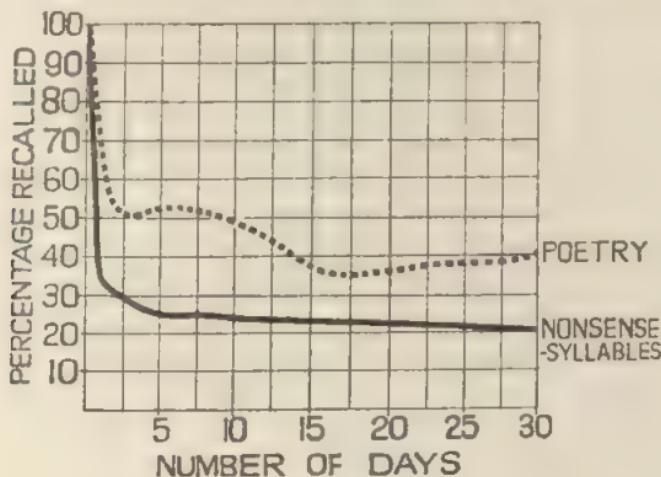


FIGURE 4
CURVE OF FORGETTING¹

subjects — the commonest words and phrases. In other subjects, e.g., History, Geography, Science, and English Literature, too often material learnt fairly well at one stage is largely lost through lack of subsequent revision. Consider, for example, the learning of poetry. If it is desirable, as most would agree, that a pupil should leave a Secondary School with a number of the best poems of our language known by heart there is no doubt that this would be more fully accomplished if some, at least, of the poems learnt at the age of twelve or thirteen were occasionally re-read in subsequent years. It is indeed astonishing, once a poem has been thoroughly learned, how readily it can be revived by revision, even after a period of some years. Again much is lost when a pupil starts in early years with detailed accounts of the history of, say, the Norman or Tudor

¹ The diagram is based on that given by D. STARCH, *Educational Psychology* (1929), p. 171.

period of English History, and then goes on to subsequent periods, and never refreshes his memory of the earlier times. The same is true as regards Geography, when the detailed study of certain countries in the first years is little referred to again in subsequent courses.

Association of impressions and ideas. Suppose two impressions, A and B, frequently occur together. Then when A recurs at some time there is a tendency for us to think of B. This is an example of the functioning of what is usually called 'the law of association'. But this description is not precise enough. For the mere concurrence or contiguity of impressions, though important, is not enough for an association to be set up. Very frequently, as I have read psychology in my study, I have heard the sound of the horns of motors passing the house. Yet I never associate motors with psychology. The reason is that I have never attended to the sound of a motor horn and to the idea of psychology together as a unity or 'whole'. For association the important thing is that the two impressions (or ideas) shall be attended to together as parts of one continuous mental process having a unity of interest.

Now that I have actually thought of motor noises as an interruption of my study of psychology, and have linked the ideas together by a relation and so formed a kind of unity, some association is set up, and if in an hour or so someone mentions motor horns I shall very likely think of these as interruptions of the study of psychology; a slight association, if only temporary, has been set up.

Frequency and recency of association. Popular thought recognizes the fact that the more frequently two impressions or ideas are experienced together, the stronger the bond of association between them. Experiment has shown that, even when the link is securely forged, some further repetitions ('over-learning') make the links last longer.

Unfortunately in much school work many pupils and teachers have relied far too much on frequent repetition as a means of learning rather than on comprehension and interest.

It is also well recognized that the more recently A has been associated with B, the more likely is the thought of A to recall

B. This is, of course, the fact relied on by the student who crams his work just before an examination. But the strength of an association due to recent linking may turn out to be much weaker in a month from now than that of another bond which now is weaker but then may be stronger. We shall refer again later to the influence of recency and frequency on association and recall, when we discuss imagination and thought.

There may, however, be a strong permanent bond of association between A and B without A and B having been either frequently or recently associated together. Such a bond may be formed by one experience if it is sufficiently *interesting*. A waltz tune to which a man once danced long ago with a girl he fell in love with but never saw again may recall her to his memory twenty years afterwards, though he has never heard it since.

The *first association* is also apt to stick – a point for the teacher to bear in mind; for example, if a pupil gets a wrong idea of the meaning of a French word when he meets it for the first time, that meaning may stick. The fact is also a warning against testing the pupil's knowledge at too early a stage, so encouraging the guessing of wrong answers which may remain in memory.

The importance of meaning and relations in association. The great difficulty there is in learning a list of nonsense syllables illustrates the weakness of association by mere contiguity without the added link of meaning or unity, even when the impressions are strenuously attended to. Many repetitions would usually be required for the learning of a series of ten syllables; whereas the following list of ten words, all connected with the idea of war, could be repeated by many people after one reading: War, army, soldier, uniform, fighting, wounds, pain, hospital, doctor, crutches. The fact is that in learning such a list of words we are reaping the benefit of earlier learnings of the meanings of the words, in which is often embodied already the links with some of the other words – war, for example, implies soldiers and fighting, and so on.

Some psychologists indeed would say that an association cannot be set up between two impressions at all unless we apprehend some relation between them. Even a group of nonsense syllables are related in the sense that they are a consecutive

series, one following another so that they do form a kind of unity, though a very loose one.¹ If the nonsense syllables are read out by the experimenter in groups of three with the first syllable accented (e.g., nüb – faz – tiv) it is found that learning is facilitated, since they are learned as groups; accent and rhythm form a link, besides contiguity, and a more unified whole is formed. The influence of this unity is shown in another way. Association links between nonsense syllables or words are usually set up merely in the order in which they are learned. As Stout points out it would be hard to say the Lord's prayer backwards and students of French have found that they may know the English for *cheval* and yet not be able to reproduce the French for 'horse'. So if I have learned the series nub – faz – tiv – wap – biv – ner and you start me with 'faz' it suggests tiv, and tiv suggests wap, and so on. But if the series has been read to me in accented groups, thus: nüb – faz – tiv; wáp – biv – ner, then if you start me with 'faz' I shall more likely think back to nub and produce the group nub – faz – tiv. Faz suggests the whole group as part of which it was learned.

Learning by 'part' and 'whole' methods. What has been said about the importance for learning of the formation of 'wholes' is well illustrated in some experiments on the learning of poetry. Let us consider the usual way in which the child learns a poem, say Gray's *Elegy*. The child begins with the first verse:

‘The curfew tolls the knell of parting day,
The lowing herd wind slowly o'er the lea,
The ploughman homeward plods his weary way,
And leaves the world to darkness and to me.’

Most children would proceed to learn the poem reading to themselves as follows, ‘The curfew tolls the knell of parting day, the lowing herd wind slowly o'er the lea, The curfew tolls the knell of parting day, the lowing herd wind slowly o'er the lea’, ‘The curfew’, and so on. Then when the pupil could say this he would go on ‘The ploughman homeward plods his weary

¹ The student may note that the *Gestalt*, i.e.,—‘form’ or ‘structure’ psychologists maintain that all learning proceeds through the apprehension and association of wholes. On *Gestalt* psychology see Note p. 259 and Index.

way, And leaves the world to darkness and to me', 'The ploughman', etc., repeating the second two lines until he can say these. The weakness of this method is, of course, that there is apt to be a gap in the child's memory between 'the lea' and 'the ploughman'. How often the teacher has to give the clue at the beginning of such sections or between the verses before the child can continue! Now it has been found by experiment that with most people, if the poem has a marked unity of meaning running through it, it can be learnt better by reading the whole poem right through over and over again, even if it is twenty lines or more.

This 'whole' method shows its superiority especially when the testing is done after an interval of days or weeks, so great is the influence of the grasping of the relation of all the parts of the poem within the whole. The superiority of the 'whole' method is less with younger children, partly because they need the encouragement of feeling they know a little bit already quite well. The superiority is also less if the poem consists of rather disjointed stanzas and ideas. It is also less with less-intelligent children. They would be less capable of grasping the interconnexions of the ideas running through the poem. Nevertheless, with poems of marked unity and with intelligent children, it has been found that the 'whole' method is usually better even for children of about eleven or twelve years.

It may be difficult at first to convince children of the value of the 'whole' method.¹ At least, however, the teacher should make sure that the pupils grasp the meaning and unity of the poem, by first expounding its general drift and reading it through, or by having it read right through several times, before the pupils attempt to learn it.

The influence of the unity of the poem does not seem to be the only factor in making the 'whole' method superior. Strangely enough, I found in experiments with the learning of

¹ I have described the methods of experiment on this topic in my *Introduction to Experimental Psychology*, Chapter VIII, where other references to various researches will be found. The evidence as to eleven- and twelve-year-old pupils was gathered by one of my research students, E. W. SAWDON. See his article, 'Should Children learn Poems in Wholes or in Parts?' *Forum of Education*, 1927, 5.

lists of vocabularies of foreign words that many students find that they can do better by reading even a list of sixteen foreign words right through over and over again, rather than by repeating the same foreign word and its meaning over and over again, though on the average the methods proved about equally efficient. Probably the repetition of the same two words several times over tends to become very uninteresting, and leads, with some subjects, to a mechanical kind of attitude, whereas the passing constantly from one word to a new one keeps the attention alert and vigorous.

The effect of testing during learning. The need to keep attention alert is probably the explanation of other results gained in experiments in which the learning of nonsense syllables and short biographies were repeatedly interrupted by the learner being tested, and prompted where necessary. The learning of the nonsense syllables was immensely helped in this way. It was found better to give even four-fifths of the time to the testing. Giving about half the time to testing was adequate for the biographies. In this case, no doubt, the stimulus provided by the tester was helpful; the learner would be kept more keyed up. There is also the advantage that here, as in the learning of poetry when almost complete, time is best occupied by concentration on the weak points. On the other hand, as already mentioned, too early testing may result in wrong associations, which may become fixed. There is also experimental evidence that corrections of errors should be made as soon as possible; and that, even so, a mistake may become more fixed by occurring, in spite of a correction.¹ No sweeping generalization can be made, as so much depends on the nature of the material and the capacity of the learner to concentrate on the work at hand; but at least it is safe to say that essays and arithmetic work should be corrected and returned as soon as possible.

The best distribution of repetitions. Closely connected with some of the above facts is a surprising discovery about the best distribution of the repetitions of a poem if it is to be learnt thoroughly. Most pupils would probably think that if they can

¹ See J. A. McGroarty and A. L. Irwin, *The Psychology of Human Learning* (1952), pp. 261 and 265.

spare, say, an hour for learning a short poem which has to be learnt by a week ahead it would be far better to give the whole of that hour to learning the poem the night before they were to be examined on it. This has been shown to be wrong. Much again depends upon the nature of the material to be learned, but it has been found that even a series of nonsense syllables was retained better if read four times a day over six days rather than twenty-four times at one sitting. Two repetitions a day for twelve days gave even better results. Striking results were also gained in an experiment with the learning of passages of history and economics. Memory was tested merely by the number of ideas retained. The results were as follow:

Read	Tested	Average amount recalled	
5 times in 1 day	Next day	66%	—
Once daily for 5 days	"	—	64.4%
5 times in 1 day	After 2 weeks	13.13%	—
Once daily for 5 days	"	—	37.26%
5 times in 1 day	After 1 month	11.49%	—
Once daily for 5 days	"	—	30.59% ¹

Of course the repetitions of poetry or other material must not be too widely spaced. It would not do, for example, to read a poem once every three months.

These interesting results may be due partly to the greater freshness and interest of the readings when they did not immediately follow one another. There is also evidence that a repetition has a greater effect on an old association than on one of equal strength but more recently formed.² The results may also have something to do with the curious phenomenon to which we now turn.

Reminiscence and consolidation. The reader has probably had the experience of hearing one day a tune or a striking passage in a speech which he is quite unable to recall on going home. Then after a night's rest the tune or the words are readily recalled. Something has happened in between. A more striking discovery was made by Dr Ballard in testing the learning of

¹ D. O. LYON, *J. Educ. P.*, 1914, 5, quoted by C. FOX, *Educational Psychology*, 1925, p. 150.

² C. S. MYERS and F. C. BARTLETT, *Experimental Psychology*, 1911, p. 162.

poetry by school pupils. He found that if a poem was incompletely learned by pupils (not older than sixteen years) it was recalled more completely by nearly all the pupils *two days later*, without any attempts to learn or recall it in the interval. The improvement was even greater with little children of five or six. Two days interval gave the greatest improvement; then one day, then three days, but by five days there was no improvement. Ballard labelled this phenomenon 'reminiscence' as opposed to 'obliviscence'.¹

Another process allied to this, and partly identical, we may call *consolidation*. This takes place when facts and ideas, gained in a lesson or in reading, seem to get themselves unconsciously sorted and arranged - 'digested' as we say - after an interval, without our actively trying to think of them; though sometimes conscious reflection does help the process. Many studies which involve complex ideas and reasoned relations, such as history, science, economics, and psychology, do require intervals for thoughtful ruminating between the times when many new facts and ideas are received into the mind. The weakness of most so-called 'intensive' courses is that they do not allow time for unconscious consolidation or thorough reflection, in conjunction with the pupils' private study.

Retroactive inhibition. This is another curious phenomenon which also may have some bearing on the value of intervals between repetitions in learning. In an experiment on learning poetry it was found that if, after learning the poetry, children were immediately occupied by doing problem-sums for a period and then tested on the poetry, they did not remember it so well as if, after the learning, there followed a period of a few minutes' rest in which they looked at pictures or did what they liked. That such retroactive inhibition is not confined to children has been shown by experiments on college students, the average loss in retention through hard mental work immediately after learning being in one experiment as much as 50 per cent. The more similar the second material learned is to that learned first, the greater is the loss.

¹ P. B. BALLARD, 'Obliviscence and Reminiscence', *B.J.P.*, Monograph Supplement.

We may suppose that the second activity, immediately following the first, reduces that consolidation which we saw to be important. If similar material follows the first there is the added danger of irrelevant cross associations being set up, as when children beginning two foreign languages at the same time get confused in their respective vocabularies. This recurrence of an idea or impression when it is not wanted leads us to the phenomenon called 'perseveration'.

Perseveration. Every reader has probably had the experience of finding a tune running in his head every now and then for some hours just after he has heard it, especially if it is an old tune once very familiar. The same thing applies sometimes to 'catch words'. The curious thing is that these tunes, etc., may continue even when we are annoyed at the recurrences and try to stop them. This phenomenon is called 'perseveration'. It is shown also sometimes in habits of movement. For example, if we practise crossing out with a vertical line all the a's and b's in a page of print, and then after a quarter of an hour's practice we try to change over to crossing out all the c's and d's with a horizontal line we find usually an impulse still remains to cross out the a's and b's with a vertical line instead of the c's and d's with a horizontal line. This phenomenon of perseveration is sometimes difficult to distinguish from ordinary retention and reproduction. Personally I think it best to confine the term perseveration to the tendency for any mental processes to recur spontaneously without any perceptible link of association, or even in spite of our efforts to repress them.

Perseveration seems to reveal itself in connexion with interrupted tasks. In one experiment subjects were given various simple tasks, e.g., to draw a vase, to model a dog in clay, to write down a favourite poem, etc. In ten of these tasks they were stopped before they had finished; in the other cases they were allowed to complete the tests. At the end the subject was asked to name all the tasks, and it was found that far more of the interrupted tasks were recalled; 68 per cent. in fact against 43 per cent. of the completed ones.

Imagery and memory. The relation between memory and imagery is somewhat complicated. As was pointed out in

Chapter II, some persons have very vivid visual imagery and little auditory imagery, others vice versa; some are gifted in both ways. Now there is no doubt that vivid imagery may often be helpful in detailed recall. For example, Professor Pear, who has very vivid visual imagery, writes as follows:

'On returning from an opera performance the present writer can give a detailed account of scenery, faces, action, lighting-effects, costumes, including even a faithful description of the tilt of the dress-tie of the first violin; the only details missing being, unfortunately, every vestige of the sounds which he heard.'¹

I myself have only faint visual imagery as a rule, but if I want to remember my route when motoring through a strange town I find it a great help to study the route and the various turnings on the map, and to recall the image of the map as I proceed through the town.

On the other hand, it is wrong to identify good visual imagery with good visual rote memory. It is clear that a man *may* have vivid visual imagery and yet be weak in visual rote memory: e.g., in a class of fifty-four, of seven students reporting visual imagery as 'very vivid', four were 11th, 31st, 45th, and 50th respectively in rote visual memory tests, though the three others were 1st, 3rd, and 5th respectively. On the other hand, in another class five out of the first six in visual memory tests reported 'very vivid' visual imagery, and one 'vivid'; and they all reported that visual imagery was freely used in the memory tests. Auditory imagery played a similar part among those at the top of the auditory memory list.

The matter is further complicated because a person with vivid auditory imagery can often make use of it for learning and recalling visual impressions, and sometimes both types of imagery may be helpful. Thus in the recalling of letters arranged haphazardly on a screen some subjects use auditory imagery in recalling the letters themselves, and visual imagery for their position. Most people are of a mixed type as regards imagery, though usually one kind of imagery is somewhat more

¹ See T. H. PEAR, *Remembering and Forgetting*, Chapter I, p. 9.

vivid than the other – if one can really compare the vividness of a visual imagery with that of an auditory imagery. Furthermore, it does not follow, because a person's dominant imagery is of one type, say visual, that the best mode of presentation for him is therefore visual. Much depends on the nature of the material. Also even an auditory presentation may give rise to visual imagery at the time of presentation.

The results of experiments on imagery and learning are somewhat vague and even conflicting.¹ As in any case it is difficult to make sure that a particular child is predominantly a visualizer ('visile'), or an 'audile', and as most seem to be of a mixed type, not much educational use can be made of these findings of experimenters. Perhaps the most important practical point is to ensure that the pupil does not neglect to use any capacity he has for visual imagery when it can be usefully applied in learning and remembering something. The same thing, of course, applies for the pupil who has specially good auditory imagery. Thus even in the learning of a maze it has been found that many subjects do better if they verbalize their scheme, e.g., saying to themselves, and recalling, 'First turn to the right then third on the left, then second on the left, then first on the right', and so forth.

Improvement in learning with practice. A great many experiments have been done on this problem, and the general result is that almost every specific type of learning is improved, at least temporarily, by specific practice. There are, however, limits, and in some cases very restricted ones. Thus, after a few trials, no amount of further practice will enable a child or adult to increase the number of figures – e.g., 3 7 9 2 5 4 – which he can recall after one hearing.

We have no satisfactory evidence that mere retentiveness is increased. When there is improvement in learning anything it is almost certainly due to other factors influencing the learning. Thus, if a youth tries to 'improve his memory' by learning one of Shakespeare's plays for half an hour a day for several months he will probably increase the amount of a play of Shakespeare's

¹ See, for example, the summary given by D. STARCH in his *Educationa Psychology*, Chapter XI.

which he can learn in a given time. But then he will be constantly increasing his familiarity with Shakespeare's vocabulary, the rhythm of his blank verse, his ways of putting things, and so forth. Thus in about fifteen days' practice, three subjects on the average reduced the time taken to learn a certain number of lines to about one-third. Others greatly improved their rate of learning the meaning of French or German words.¹ Here the number of words learned varied from 630 to 1,050, and some general resemblances would be likely to appear. Even the rate of learning nonsense syllables may increase for a time. The learner gets used to their strangeness, and perhaps begins to use a rhythm, or to associate words with some of the syllables, or the interest of the experiment may grow and concentration become greater.

It is certainly clear from experiments that the mere strangeness of a test, as a test, is very apt to lower the score on the first occasion, and that this effect may disappear in a second or third testing giving an impression of 'improvement of memory' which is illusory. Thus Sleight found that the mere giving to school children, of about twelve years, of a test a second time after three weeks, and then a third time after another three weeks, resulted in appreciable improvements – without any practice in the intervals.²

Is a general 'training of the memory' possible? We have in Chapter II already seen that there is no satisfactory evidence that a special training in the learning of one kind of material results in a *general* improvement in learning and remembering. Thus one experimenter practised one group (A) of eight students for fifteen days for an hour or half an hour a day in memorizing lists of twelve nonsense syllables. Before the practice period he gave the students tests in learning (a) poetry, (b) prose, (c) Latin vocabularies, and (d) nonsense visual diagrams. These tests were also given to a 'control' group (B) of five students who did not have the special practice. At the end of the practice period similar tests to these (a), (b), (c), and (d) were also given to both groups of students. The fifteen days' practice of

¹ See STARCH, *Educational Psychology* (1929).

² See W. G. SLEIGHT, *B.J.P.*, 1911, 4.

Group A in learning nonsense syllables resulted in marked improvement in learning them; the time required to learn a list of twelve nonsense syllables was reduced by half. There was, however, no 'transfer' of this improvement to learning the other kinds of material. Of course, fifteen days is a short period for training effects to show; but it is to be noted that there was time for marked improvement in the *specific* learning of the syllables.¹

Very similar results were gained in the elaborate experiment by Dr Sleight already referred to in Chapter II, p. 6). Sleight used the *method of equal groups*, which is so useful in various kinds of psychological investigations that we ought to describe it briefly. The children Sleight used as subjects in the experiments were first given ten different kinds of tests in learning and recall (poetry, prose, nonsense syllables, spot pattern, etc.). On the basis of these tests the children in each of the three schools used in the experiment were divided into four groups of equal average performance, so that they could be regarded as approximately equal in their capacity for learning and recall.² Then for six weeks one group was given special training in learning prose passages, another in poetry, another in tables, the fourth group being a 'control' group having no special training. In the middle and at the end of the training the ten tests were given to all the children again.

Sleight had eighty-four school children as the subjects of his experiment; their average age was 12 ; 8 when we should expect retentiveness to be if anything, more responsive to practice than in adults. He found signs of *specific* improvement, but

¹ See R. S. WOODWORTH, *Experimental Psychology* (2nd edit., 1951), pp. 190, 191.

² The method may be illustrated as follows: Suppose we wish to obtain two 'equal groups' on the basis of any tests, we find the order of merit in the tests and then distribute the children thus:

Group A.

1st boy
4th boy
5th boy

Group B.

2nd boy
3rd boy
6th boy

and so on, rather like two captains picking sides, but not giving one captain always the better of each pair.

no evidence of a *general* improvement by the trained groups as compared with the untrained 'control' group.

The period of training was no doubt a short one. Greater effects might result over a period of years. Still we can say at least that the most reliable experiments so far afford no evidence that there can be such a thing as a general improvement in remembering, as the result of merely specific exercises.¹ Indeed, we have no proof that even the specific improvement in the learning of nonsense syllables or vocabularies continues long after the training period.

We know also that adults who have had long practice in all kinds of learning and remembering still show great individual differences in visual rote-memory, auditory rote-memory, and so on. As we saw in Chapter II, a student may even be top of a class in logical memory tests, though he is near the bottom in rote-memory tests, whereas if there were such a thing as a 'general faculty' of memory or even if there were a large element of retentiveness common to all types of learning which was improvable by practice, then the long practice in school and in everyday life would surely tend to bring up the efficiency of different kinds of learning and remembering to a similar level, and also tend to constantly increasing facility in learning and recall; whereas we know, however, that retentiveness does not steadily increase with age after adolescence, as it should do if mere exercise improved it.

Apart from all these facts, as we have seen, much the most useful and efficient way of learning and remembering is to detect, or if necessary to make, logical interconnexions between ideas and meanings, and much the greater part of learning and remembering, both in school and later, should be of this type. Such meaningful learning is also retained longer.

How learning and remembering can be improved. These experimental results, however, need not be regarded as discouraging, because, as already indicated, the most important learning is concerned with meaningful material and the building up of

¹ Some earlier experiments which seemed to show that the effects of specific practice might spread to other kinds of learning, were faulty in method as SLIGHT showed; see his article, *B.J.P.*, 1911, 4.

connected ideas. Now the more we study a subject, the richer becomes our supply of ideas, and the more meaning we see in them. Thus the greater becomes the possibility of linking a new idea with some idea already absorbed, and so of retaining it and facilitating recall; or as some psychologists would put it, the more we build our items of knowledge into wholes and interconnect these within greater wholes, the more readily will the recall of one item tend to bring to mind the whole of which it is a part. In short, system and understanding are two of the three chief means to efficient learning and remembering. The other most essential condition is *interest*, the importance of which we have already stressed. Hence, we see the necessity for increasing, so far as we can, the pupil's motive for learning. We may, however, recall the following practical hints gained from experiments on learning and remembering:

- (1) The value of the 'whole' method against the 'part'.
- (2) The importance of early and repeated revision.
- (3) The use of repeated testing.
- (4) The proper spacing of learning with due intervals between them, instead of concentrating into one sitting all the time that can be given to a particular task.
- (5) The need for adequate pauses to avoid retroactive inhibition.

The value of guidance in methods of learning is exemplified by the research of H. Woodrow.¹ The time of one group was spent entirely on learning poems and nonsense syllables, while part of the time of another group was occupied in instruction in methods of memorizing. The instructed group surpassed the other in all the tests in foreign vocabularies, dates, lists of consonants, poems, and prose which were given before the practice period and after.

Woodrow includes in his list of methods of learning, not only the Nos. 1 and 3 I have given above but also the use of grouping and rhythm (which I mentioned earlier) and attention to the meaning and use of symbols to embody meaning.

¹ See *J. Educ. P.*, 18, summarized by R. S. WOODWORTH and H. SCHLOSBERG, *Experimental Psychology* (revised edit., 1954), p. 745.

Mis-remembering. Interesting results have been found by experiments in which a brief story or a report of an incident is read to a group of people and they are asked to reproduce it after an hour or so, and then to reproduce it again a day or two later, and again after another interval. With the passing of time and in the process of forgetting, items do not merely drop out of recollection. That does happen, of course; but in addition the subject of the experiment begins to insert items which were not in the original story or to alter them to fit in better with the general idea which the story conveyed to him. This has been found especially when the story is of the imaginative and fanciful type found in folk-lore. Professor F. C. Bartlett, in his interesting account of such experiments, reports the following as emerging in repeated reproductions of a story.¹

(i) There is a tendency for the main form of the *first* reproduction to continue: that is we tend to recall our *first remembrances* of an event as well as our first experience of it.²

(ii) When details do not fit in with the general idea which the subject has formed they tend to be forgotten.

(iii) New details may be introduced which fit in well with the subject's general idea of the story.

Thus there is a process of *rationalization*, of linking details together in some way to make a rational whole. Sometimes there occurs what we may regard as a kind of suggestion. Thus in a short story I invented for the purpose of this experiment, about some spies in London, and which I read to a group during the last war. I deliberately described the suspects as 'Belgian or German', but I found that in the reports made by the subjects of the experiment, the word 'Belgian' was almost always eventually omitted – as not fitting in with the idea of spying in England. Where prejudice and strong personal interests enter in, such distortions and additions or omissions are more likely to occur. But Barlett found that all the kinds of errors mentioned

¹ See his book, *Remembering: a Study in Experimental and Social Psychology* (1932).

² This was confirmed in a later research by H. KAY (*B.J.P.*, 1955, 46), who also found that errors had to be specifically noted as wrong if they were to be eliminated.

above occurred even when the story was a simple account of a cricket match. Such experiments exemplify the way in which rumours change and grow, unintentionally, and they are a warning against the special dangers of exaggeration and one-sided accounts where prejudice or 'wishful thinking' is involved.

The errors are still more frequent and amusing if the experiment is done orally with a group of persons. This can be done quite easily in the course of a lecture. The lecturer hands a paper giving a short story or report to the first student to read to himself. After an interval of, say, two minutes the latter whispers what he remembers to student number two, and so on to the end of the row: the lecturer can proceed with his lecture throughout the experiment. Difficulty of hearing leads not so much to omissions as to mishearing. For example one of my students misheard the word 'reporter' (in the spy story) as 'porter'. Soon the word 'train' was added and a story as to what happened in a railway station developed. Constant changes occur in accordance with the general idea of the report or with preconceptions and prejudices – again an example of the kind of thing which happens in gossipy reports, and also a warning to the teacher of the slips in both apprehension and recall which can occur in the course of oral lessons.

Note on Gestalt Psychology. The German word *Gestalt* means 'form' or 'configuration'. The Gestalt psychologists emphasized the importance of configuration in perception and of 'wholeness' in learning. They were in revolt especially against the early 'associationist' psychologists, who wrote as though knowledge and awareness were built up by the association of isolated sensations together. But the importance of form and structure was long ago emphasized by the English psychologist G. F. Stout in his *Analytic Psychology* (1896). For example, he stressed the fact that our apprehension of a tune as a tune is independent of the key in which it is played. It remains the same though the individual items are changed.

The use of other terms for association. We have already seen (p. 55) that the term 'conditioned reflex' has been used for associated reflex. The reader may come across other alternatives and

complications, especially in American literature. The avoidance of the term 'association' in much recent psychology was probably encouraged by the revolt against the rather mechanical associationism of early English psychologists and philosophers mentioned in the note on Gestalt psychology above. We have already pointed out in this chapter (p. 244) that mere contiguity of impressions is not enough to associate them, but that unity and continuity of interest and of conative activity is necessary, as Stout pointed out, long ago.

Thorndike, in discussing especially his experiments on animals, preferred the term 'connexionism' to association, and he emphasized the importance of a satisfactory 'effect' to an action, if that action was to be learned. To this point we shall refer in the next chapter in studying the learning of movements.

But a word must be said about another term relating to the process of learning and remembering as discussed in this chapter, viz., 'Secondary reinforcement'. This term is used by Clark Hull (see his *Essentials of Behaviour*, p. 28). Put in familiar terms which we have used in this chapter, it means that when a stimulus (like Pavlov's ticking metronome) becomes associated with the reward (food), and so itself starts the flow of saliva, then if another 'neutral' impression (e.g., the sight of a black card) is made at the same time as the metronome clicking, it also becomes associated through that clicking with the food reward, and finally, would so function by itself in producing the flow of saliva, or, if used at the same time as the metronome, as further reinforcing it. Such secondary reinforcement, it is claimed, may similarly affect learning and remembering as discussed in this chapter; thus, though the primary motive for learning to read may be to please the teacher, the satisfaction associated with this may become associated with the mere sight of the book, so that this itself may 'set off' the impulse to read and act finally as an aid to the primary motive. Thus we may get a whole string of backward associations affecting our impulses, with effects similar to the utilitarian motive associated with the learning of French (see our Chapter XVII). I can, however, find no justification for Hull's assertion that 'most

of civilized human learning apparently is effected through secondary reinforcement' if he means through secondary enforcement *only*.

Finally, as to the concept of association I will quote the eminent historian of psychology, Gardner Murphy. He states that 'the conceptions of Spencer and Bain a hundred years ago remain dominant'. 'An enormous amount of sophistication has gone into experimental and quantitative refinement of the theory of association, but the framework of the associations remains'.

¹ See his *Historical Introduction to Psychology* (5th edit., 1949), p. 283.

CHAPTER XX

LEARNING MOVEMENTS AND THE ACQUISITION OF SKILL

Attention and the acquirement of skill. As pointed out at the beginning of the last chapter, learning verbal material is not entirely different psychologically from the acquirement of skills, for learning and remembering complex movements also depend on fundamental retentiveness and the fixing of associations; but there are obvious differences between the two kinds of learning. Let us consider as an example of the acquirement of skill, learning to play the piano. After we have learned thoroughly to play a piece of music 'by heart' on the piano, then when we begin with the first few bars the required movements seem to 'run off' pretty much of their own accord. Careful thought as to precise movements is of little help; indeed, if we stop to think what is the next movement it often results in utter failure, and we have to go back to some earlier part of the series. In first learning such a series of movements, however, attention and interest are as necessary as they are for the setting up of verbal and other associations.

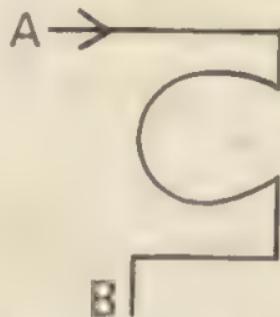
It would seem that movements which at first require careful attention for their execution become largely automatic and unconscious, conscious attention being necessary only for their starting and ending and for general guidance and expression. Thus a skilled pianist can often play a piece of music and carry on a conversation at the same time.

In the very earliest stages of such kinds of learning, however, e.g., when a little child is learning its first piece of music or learning to write, careful attention to each movement is essential. Later, as the actual striking of the piano keys and the association of the right movements with given music notes become more and more fixed and automatic, attention can be more completely transferred to expression in playing. Similarly, it is

only when the act of writing is performed with ease that we can expect the child to pay full attention to matter, spelling, and style.

Muscle and movement sensations, and their recall. In the learning and remembering of skilled movements, important elements are those rather obscure muscle and skin sensations which we derive from the movements of hands and limbs (kinaesthetic sensations), together with the recall of the direction of movements. All these may be connected with a specific ability, which we shall discuss in the chapter on special abilities. In the sensitivity to such sensations there are considerable individual differences. One way of testing this sensitivity is by the judging of a series of weights with fine gradations, all in small boxes of the same size. In such tests boys of about eight to eleven are, on the average, superior to girls of the same ages.

Precise remembering of movements and of their extent and direction is obviously important in many skilled actions, e.g., playing a composition on a piano or a fiddle, playing golf, and so on. A simple means of testing such 'motor memory' is by blindsfolding a person, guiding his hand (holding a pencil) over an irregular pattern of the type shown here, but larger, and then placing his hand so that his pencil is at A and telling him to retrace the same path.



Learning by method of trial and error. In learning such actions as playing the piano, the successive movements seem to be largely under the player's control. He sees the note which he has to strike, and realizes which finger he has to move, and in which direction it must go. But the movement at first is clumsy and

explorative. Later, when the learner has practised sufficiently, the apprehension of the direction of the required movement and the appropriate movement of the fingers become thoroughly associated. In the case of the little child learning to write, these associations are not yet established. He may have to try several movements before he hits the right one; and then it seems more or less of an accident.

In learning such a game as tennis or golf, this haphazard element is especially prominent. We cannot always at will repeat a successful movement; but after a failure we try again, with some half-conscious variation of movement. Gradually the better movements seem to be more and more fixed, and the worst eliminated.

This process has been called 'learning by the method of trial and error' or better, 'trial and the elimination of error'. It is characterized by great fluctuations in performance: some good strokes in golf may be followed by some very poor ones; a good day by a relatively bad one.

It is generally thought that the satisfaction which follows a successful action tends to stamp in the right action in accordance with the 'law of effect' as Thorndike called it. If this is so, consider what is necessary if a child is to learn any action which depends partly at least on such 'trial and elimination of error'.

First, he must keenly desire to make the right movement — otherwise success will give him no satisfaction. Secondly, he must know precisely when he makes the right movement and when he has made a mistake; and the child has to discover the right movement and not merely to make a movement which is obvious to him. Both of these conditions, it is feared, are often lacking when a child is set to learn to write or to do some hand-craft work in which he has no interest. Interest helps in the learning of skilled movements, possibly as much as it does in the learning of verbal material. Fortunately, as we saw in the section on constructive and creative activities (Chapter XV), most children are naturally interested in making or 'doing'. But the child likes making and doing real things, rather than just learning skilled movements for their own sakes. Thus the older methods of teaching drawing and woodwork often erred in be-

ing too formal, as we saw before (Chapter XV). In drawing an interesting figure, say of a man, the child will thus be more likely to learn how to draw certain kinds of curves than if he merely practises making the curves themselves. The expert may think otherwise, but then he has become keenly interested in mere technique.

An experiment in learning by trial and error. The best illustration of the study of learning by trial and error is given by experiments on 'mirror-drawing'. In this the subject tries to trace with a pencil an irregular figure which he can only see reflected in a mirror, in which he also sees his hand following the outline of the figure.¹ Thus he has to move his hand towards him to produce a movement which in the mirror appears to be a movement away from him. When the tracing has been completed the numbers of errors (divergence from the printed line and wrong turnings) are counted and the time taken is noted. Another copy of the same figure is now traced and so on till the subject is fairly skilled.

Progress in such a learning process proves to be most irregular. There is only a gradual elimination of errors. Figure 5 shows the record of one experiment.²

It will be seen that there were nearly as many errors made on the third and eighth attempts as there were on the first; whereas if progress depended merely on the grasping of the principle of procedure, effective skill would appear all of a sudden. The grasping of the principle does, of course, help, and here we have the explanation of the fact that the effects of practice in mirror drawing with the *right* hand are shown decidedly by most normal children when they try to do mirror drawing with the left hand: whereas the very dull children do not show such transference.³

Such absence of 'transference' in the acquisition of skill is a general characteristic of very dull children. Every particular skilled action has to be learned as a new one, though it may

¹ Detailed instructions for the experiment are given in my *Experimental Psychology*, p. 136.

² This record is taken from the book just mentioned, p. 106.

³ *Op. cit.*, p. 134.

greatly resemble another already learned. The dullest children, as Burt found, have to be shown explicitly what points of contact two different types of skilled actions have. Even if they grasp a principle or learn a rule 'they seldom see when to apply

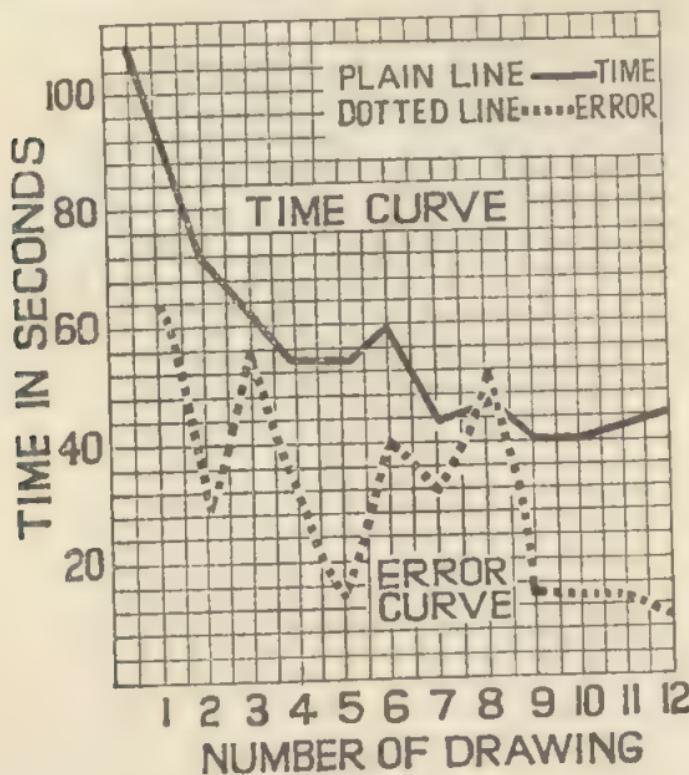


FIGURE 5
MIRROR-DRAWING CURVE

them. Each time they have to be told afresh what method to use or which procedure is required. Nearly all their training has to be specific — expressly undertaken for the particular task in hand.¹ Clearly the wrong application of a principle may do more harm than good. The less intelligent have also been shown to be less agile in spotting slight resemblances that may give a clue.

¹ BURT, *op. cit.*, p. 505.

Interest versus technique. Experienced teachers of all varieties of skills — writing, typewriting, golf, coal getting — know how important it is that at the earliest stages the correct kinds of movement should be made. The wrong holding of the pen or the cricket bat may become fixed, and time wasted later in getting rid of the early habits as well as in learning the new ones. The first lesson in golf for a man who has tried some time without instruction often makes him worse than he was before. By the modern method of teaching typewriting the learner is not allowed to search for a given letter on the keyboard and then strike it. He is encouraged to set up a direct association between the idea of a particular letter and the requisite movement, so that he can eventually type correctly even when a screen is held between his eyes and the keyboard: thus later his eyes can be constantly on the shorthand material he is typing.

This stressing of the importance of correct movement from the start may seem to be inconsistent with what was said earlier in this chapter about the importance of interest and of the making of concrete things. The young typist wants to produce a letter right away. Shall we not dull his interest by insisting on technique practice right away? The young pianist wants to play a tune, not five-finger exercises, and so on.

We may admit at once that the two principles are opposed to one another; and here, as so often in education — and in many wider issues in life — we must compromise and adapt the method to the individual. With the enthusiastic pupil we can more safely stress the importance of good technique from the start. The more apathetic child we must tempt by letting him produce concrete results, if poor ones, from the beginning.

Individual differences in acquiring skill. The learning to play a musical instrument exemplifies individual differences. Thus in learning to play a piano or clarinet the learner usually proceeds by associating a given mark printed on the music score with a certain note on the piano or clarinet. That is how as a boy I learned the piano. But now in learning to play the clarinet, at the early stages I find it much easier to associate a certain interval, above the note being played at the moment, with the required movement and placing of the fingers: and thus I can

play simple tunes 'by ear' although I cannot yet play anything 'by sight'. Yet some pianists who have made considerable progress in sight reading find it impossible to play even a simple tune 'by ear'.

It has also been found that different methods are followed by different persons in learning to trace a maze blindfold. In some experiments the maze consists of a metal or wooden slab, with passages cut in it somewhat as shown in Figure 6. The subject holds a thin metal rod, placed in the hole marked 'start'. He

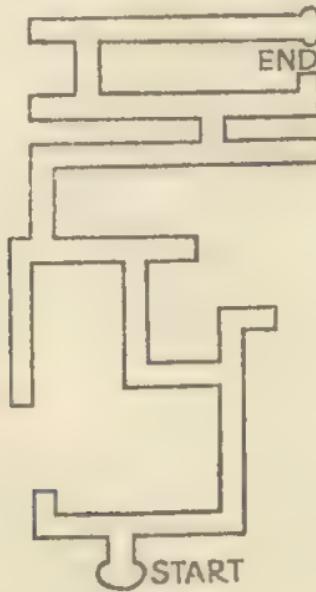


FIGURE 6

has to learn to move it along the passage without making a wrong turning until he reaches the end.

Now it is found that subjects reveal three types of learning. There are those who rely chiefly on verbal rules — saying 'first to the right, then first to the left, left again', and so on. This is the most usual and for most persons the most reliable method in learning the maze. The second method is to rely on motor memories based on kinaesthetic (movement) sensations. In this the hand seems eventually to move of itself in the various right directions. This is genuine 'trial and error' learning.

Finally, there is the man who forms a visual image of the maze as he explores it. This is usually a more efficient method than the motor memory method.

Many persons no doubt use two or even all three methods at times, the method most relied on varying with the kind of activity being learned. As we have seen, the processes involved in different kinds of skilled actions — writing, typing, knitting, playing the piano, using a chisel, and so on — are so varied that one cannot formulate a general rule for all. I only wish to stress the fact that the best method of procedure for one person may not be the best for another: and that one child may not be so fitted, as most are, for the method which gives the best results on the average among all learners.

We may also state fairly confidently that the expert teacher who has analysed his own procedure and formulated it in words, is apt, in training the beginner, to rely too much on the expression of procedure in words.¹ I certainly found this tendency in learning during the recent war to manipulate the Bren gun (in order to study army methods of instruction), whereas I found I could learn best largely by trying to make the correct movements until I hit on the right ones, with only slight guidance by verbal formulae; and among a hundred former students of mine in the Army, of whom I made detailed inquiries, the majority also reported that in small weapon training there was too little opportunity to 'learn by doing'.²

Some persons with good verbal memories will readily learn the verbal instructions for skills which can be formulated in words, as in learning the Bren gun and to some extent in writing or typewriting or handcraft work. All that is being emphasized here is that the teacher should be aware of both types of learners. The fact that children above all love to learn by

¹ Often the expert's analysis of his own actions and his verbal description of them are very incomplete; indeed the description of skilled movement really needs a new vocabulary as Professor Pear has so clearly emphasized; see his article on 'The Intellectual Respectability of Muscular Skill', *B.J.P.*, 12. The article gives a valuable discussion of learning skills by one who is predominantly a visualizer.

² I have reported this inquiry in a chapter of my little book, *The Human Factor in the Army* (Gale and Polden, 1941). The chapter was based on a memorandum prepared for the War Office, Department of Training.

doing, and to 'try things themselves' makes it still more important that verbal rules should not be relied on too much in their cases.

Teaching by demonstration. For many types of skills, demonstration by the teacher and attempted imitation by the pupil is the best introduction. In learning brick building, for example, I found it much easier to learn from watching a skilled brick-layer than by reading a simple book on the subject.

In demonstrating, however, the teacher must be aware of the added difficulty if he demonstrates an action while facing the class or learner. This means that the learner has to reverse the directions of the demonstrator's movements. It involves a grasp of spatial relations, and may be beyond the power of many pupils, who fall back on trial-and-error procedure. I have found that even a professional dancing instructor may ignore this difficulty, and that I learn a new dance step better by following behind a good dancer and imitating his movements.¹

Furthermore, in demonstrating an action the teacher must bear in mind that the pupils has to translate the seen action into voluntary movements; and this difficulty occurs more especially in the pupil who relies chiefly on muscle-sensations or the 'feel' of the movements which have to be made. As Professor Pear puts it,

'Our thinking runs a risk of being confused by the stress which is usually laid upon what motor activity would *look* like to an external observer rather than what it *feels* like to its initiator, and upon what it does to external objects rather than upon what it is. Its physiological aspects and its behaviour-effects are subjects for consideration quite distinguishable from its subjective or strictly psychological aspects.'

Pear goes on to comment on the distinction between those who have vivid imagery of muscle movement (kinaesthetic imagery) - 'motiles' as they are sometimes called, and those who have not.

¹ I am interested to note that Professor PEAR found the same thing, *op. cit.*, p. 171.

'Often, once this newly taken-up bodily position has been abandoned, many unfortunates can evoke no genuinely kinaesthetic memory of it, and so, in order for it to be learnt, it has to be assumed a wearying number of times. As a stepping-stone to these new achievements they resort to visual or verbal aids, or use both together; they picture the arm or leg in a certain position before putting it there, or they anxiously mutter, quietly or audibly, some exhortation given by their teacher, "follow through", "watch the sideline", "bend the knee", "right shoulder forward". Some persons, endowed with well-marked kinaesthesia, remember their new movement from the very beginning in the same "language" in which they will eventually wish to express it, in the wordless language of kinaesthesia.'¹

Individual differences in *degree* of the abilities required for a particular skill are just as striking as differences in type. Thus, in learning a maze of the type described above, among one class of students it was found that the quickest learned the maze in nineteen trials, while the slowest took seventy-eight.²

We may expect to find as great a degree of individual differences in abilities required for skills as we did in general intelligence, and specific abilities (Chapter III). Indeed, intelligence itself enters considerably into the learning of all complete skilled actions. If the scores on a group of such actions are added, substantial correlations with intelligence tests are found. In relatively simple skills general intelligence may enter only at the early stage of learning, and thereafter improvement becomes a question of increasing mere manual dexterity.³

Some further results of experiments on the acquisition of skill. A vast number of experiments have been done on this topic, but the results are hard to summarize, as they vary so much according

¹ *Op. cit.*, p. 169. The whole of this valuable article should be read by specialist instructors in any kind of manual craft or muscular skill. As the kinaesthetic sense is not included in the traditional 'five senses' its existence is apt to be forgotten by the teacher.

² BORING, LANGFIELD, and WELD, *Psychology* (1935), p. 318.

³ See for example, 'The relation between general mental development and manual dexterity', by PORTIA HOLMAN, *B.J.P.*, 1933, 23, p. 279.

to the particular kind of skill concerned, its simplicity or complexity, its relative dependence on intelligence or mechanical aptitude, as contrasted with mere manual dexterity. Here we can only select a few results because they are fairly general or have a direct bearing on practical training.

In most records of the acquirement of skill through practice it is found that the upward curve of progress at times ceases to rise; it reveals a *plateau*, the learner apparently marking time. The causes of these plateaux seem to vary. It may be that the learner is bored and less effort is put forward; it may be that a stage is reached where a new step is needed before further progress can be made.¹ Sometimes concentration on one element in the total activity results in other elements deteriorating, or the element concentrated on may itself deteriorate.² The common occurrence of such plateaux in experiments in which the subjects are doing their best to improve should warn the teacher, and the supervisor of industrial work, not to expect a regular and uninterrupted rise in the record of progress.

The benefit of *rest-pauses* and of proper *distribution of practice* is also worth noting. In the last chapter we saw that, in learning a poem, the best results are not gained by reading the poem over twenty or thirty times at one sitting, but by a more widespread distribution of readings. Somewhat similar results have been found in experiments on skills. Thus in an experiment on mirror drawing it was found that better results were gained when there was a rest of one minute after each trial.³ Further research is needed as to the best rest periods and practice periods for different kinds of activities; but at least we must not take it for granted that a continuous hour spent in learning to write or practising with a typewriter or knitting is as good as two periods of half an hour or even four of a quarter of an hour.

¹ For a summary of experimental evidence as to plateaux, see article by W. S. HUNTER in *A Handbook of General Experimental Psychology*, edit. by G. MURCHISON (1934), p. 506.

² See M. D. ALLEN SMITH, 'Periods of arrested progress in the acquisition of skills', *B.J.P.*, 1930, 21.

³ The value of rest pauses has even been shown in experiments in maze learning by rats. See W. S. HUNTER, *op. cit.*, p. 519.

The study of skilled movements in industry. A great deal of valuable research has been done on the problem of efficient movements among manual workers, and practical conclusions have been made which have greatly decreased fatigue and accidents and have increased output, as we exemplified in Chapter I (p. 5). Here we can only note two things which have some general bearing on the acquisition of skills. First, that improvement may take place not only by the elimination of wrong movements but also by the omission of unnecessary movements, which would result in a waste of time and energy. Second, improvement in skill usually results in the elimination of excessive effort, which makes the work both more pleasant and less fatiguing.

Experiments have also been done on the relative value of concentrating first on accuracy in movements instead of on speed. Thus in the learning of typewriting it was found that accuracy would not improve 'of itself' as speed did. One group of learners were encouraged at first to be accurate even if slow; another group were made to go fast even at the expense of accuracy. Later the instructions for each group were reversed. It was then found that the 'speed group' acquired at once almost the accuracy of the 'accuracy group' without appreciable loss of speed, and that the 'accuracy group' acquired at once the speed of the speed group without appreciable loss of accuracy.¹ As the investigator points out, there seems little to choose between the two methods, unless it is desired at an early stage to make actual use of the ability.

Transfer of training in skills. In Chapter II on the 'Faculty Psychology' we saw that we could not infer that a training in one kind of memory work improved other kinds of memorizing; and so with observation. Similarly, we must beware of supposing that the acquiring of one skill improves our capacity for others. Any kind of handwork will, of course, develop some of the muscles of the hand, and in a young child will help to establish associations between hand movement and the perception of the direction in which movement is desired. Where in other kinds of craft work the same elementary movements and

¹ See DR MARY STURR's article, *B.J.P.*, 1921, 12, p. 297.

associations are also needed we may expect that the earlier training will be of advantage, though even here we cannot be certain. Much bricklaying might be a hindrance for the fine adjustments and delicate movements involved in, say, shorthand, and sometimes specific movement-habits may actually interfere with the appropriate movements which have to be learned for a partly similar and partly different new skill: just as practising crossing out all the letters A, B, and C in a page of print hindered the later crossing out of all the letters, D, E, and F.

Nevertheless, under appropriate conditions specific practice in certain skills may improve efficiency in new skills. We have already seen that, with intelligent children, improvement with the right hand in doing mirror drawing may be 'transferred' to the left-hand drawing. An investigation by J. W. Cox on the transfer of effects of training in the acquirement of skill is important here.¹ He tested five groups of adults in various kinds of processes involved in assembling and wiring or taking to pieces ('stripping') an electric lamp-holder. Then all the groups except one (the control group) were given practice for eleven days in various other kinds of assembling and stripping, but the practice was not guided by instruction in methods of procedure. (Two groups of school children were also similarly used in the experiment.) At the end of the practice period the original tests were given again to all the groups. The general result was that the practised groups showed no greater improvement in the final tests than did the unpractised control groups.

In the second part of the experiment, however, the subjects were given a 'knowledge of certain general principles underlying the skilful handling' of the material, and they had practice in applying these to only one assembling operation. Only the same amount of time was expended in this later training experiment as in the first.

Now it was found that when there had been both practice and instruction in principles of procedure 'the skill thus developed' did 'tend to transfer to other operations over a fairly

¹ See his article in *B.J.P.*, 1933, 24.

wide range of manual activity'. There was transference at the 'ideational level', though not at the merely 'neuro-muscular level'.

In reference to the acquirement of skill, then, we find a similar result, as to 'transfer' of training effects, to those we found in such diverse activities as observation and habits of conduct: namely, that the grasp of a principle or the adoption of a method or ideal, may result in a more widespread general improvement, whereas narrow mechanical practice of a specific activity results in only specific improvement. It may indeed hinder the acquirement of a closely allied activity, as we saw in our section on Perseveration in the previous chapter (p. 251). We shall refer again to transfer through the grasp of a principle in our next chapter in reference to training in reasoning. The advanced student will find a more detailed survey of experiments on transfer in J. A. McGEOCH and A. L. IRION, *The Psychology of Human Learning*, Chapter X.

Human learning and experiments on animals. The grasping of a principle of method is comparable to what the Gestalt psychologists call 'insight'. Some of the leading Gestalt psychologists maintain indeed that there is no blind learning by 'trial and error', even by animals. In Kohler's famous experiments with apes there is little doubt that one at least of the apes suddenly solved the problem of raking in a banana by fitting two bamboo canes together. But the fact that sometimes animals learn through insight does not prove that they (or humans) never learn anything by trial and error, with only slight general guidance by understanding.

It will be seen that in this chapter I have not attached much importance to experiments with animals and have exemplified learning by trial and error by human examples. In America, Thorndike, in his early experiments with cats, tried to demonstrate that merely blind learning by the stamping in of right actions comes through the satisfaction of success, the so-called 'law of effect'.

Another leading American psychologist, C. L. Hull, refers to the 'cessation (or reduction) of a need' as effecting the bond between stimulus and response, rather than the 'effect';

though it would seem that any 'cessation of a need' might be regarded as necessarily involving a 'satisfying effect'.¹

The satisfaction of the need effects what Hull calls 'the primary reinforcement' of the response to the stimulus. We have already referred to Hull's term 'secondary reinforcement' in the note at the end of the previous chapter. These other terms for association cover substantially what we have described as basic association. Indeed, it is notable that Hull is described as 'definitely one of the new associationists' by R. S. Woodworth in his admirable book *Contemporary Schools of Psychology* (8th edit., 1951), where a general account of Hull's views will be found.

The Gestalt view as to insight, however, seems to apply to at least some learning by animals; e.g., E. C. Tolman held that even learning by rats in a maze was largely by noting signs of direction, and not by a mechanical stamping in of the right actions by final reward.²

We may agree with Tolman, on the basis of the numerous experiments he reports, that the learning of rats in a maze may be partly through awareness and learning of signs and not merely by the mechanical building up of kinaesthetic habits through satisfying effects. But it is notable that Tolman himself admits that in the learning during the period in which the rats, even when successful, were not rewarded by food, there would be at least 'minor effects' due merely to getting free of the maze (see his book, pp. 61 and 363-4). This point seems to have been overlooked by British exponents of Tolman's views. Tolman also states that rewards stimulate performance, even if they do not determine learning.

In any case animal psychologists themselves are far from agreed on these differences between Hull and Tolman. Thus G. C. Drew³ points out that more experimental work is needed. A wider survey of experiments on learning will be found in *The Psychology of Human Learning*, by J. A. McGroarty.

¹ See G. L. Hull, *Principles of Behavior*.

² See his *Psychology of Learning and Motivation* (1932).

³ G. C. Drew, 'Studies of Animal Learning' in *Great Trends in British Psychology*, edited by G. A. Macrae and Philip Vernon (1953).

and A. L. IRION (2nd edit., 1952). But a substantial part of experiments surveyed concern animals, and the authors themselves state (p. 256) that findings on animal learning cannot be 'applied directly and without change to the control of human learning'.

Finally, I may add that even if eventually it were proved that there were no learning (even by animals) by trial and error through after effects, and that all learning were by insight or learning of signs, the two conditions I mentioned above (p. 264) as necessary for the human learning of skills remain, viz.: (i) a keen *desire* to make the right movement, and (ii) the *awareness* by the pupil when he has made the right movement and when a mistake.

CHAPTER XXI

THINKING AND TRAINING IN REASONING

Popular and more precise meanings of 'thinking'. 'Thinking' is yet another word which in popular language is used with several different meanings. When looking at a distant vague object we may say, 'I think it's a horse.' Here we have merely visual sensations plus interpretation; and the process might also be labelled 'perception', though that too would be incomplete. After a day in the country we may lounge in a chair, mentally picturing a beautiful river and the reflection of the trees, and may say, 'I'm thinking of that lovely river.' This process may consist largely of 'visual imagery'. A series of associated ideas may 'run through the head' with no particular purpose, a type of thinking in which the dullest person may indulge. Again a master, speaking to a boy who is attempting to solve a problem in algebra, of a kind which has just been expounded to him, may say, 'Think, boy, think.' Here is something much more than the first three examples. The boy is expected to recall and apply to new facts and figures a principle or method he has previously had explained to him.

In strict psychological discussion it is well to keep the term 'thinking' for an activity which consists essentially of a connected flow of *ideas which are directed towards some end or purpose*. One example would be a philosopher with eyes closed, following a train of reasoning in his mind directed to the solution of some theoretical problem. But the end or purpose may be a practical one, including the handling of a new machine or the manipulation of some material for a definite purpose. As we saw in the last chapter, genuine thinking may be involved in acquiring a skill, so far as it is not a mere learning by trial and error, or mere perceptual exploration.

Useful thinking and reverie. The essential nature of genuine

thinking may be brought out by a contrast with reverie and day-dreaming. In reverie we just let our thoughts wander on without any definite end in mind, except perhaps our own entertainment. Useful thinking, however, is directed towards the solution of some problem. This means the checking of our thoughts and guiding them in a way which we hope may help towards the solving of our problem. Here we come very closely to the same situation which we discussed under the heading of 'Attention', because we have to keep attending to the main problem before us and reject irrelevant and wandering thoughts which do not seem to be leading us towards a solution of our problem.

Now if a problem is one about which we care very much the idea of that problem will dominate our thinking more or less of itself. If I have to get to London for an important engagement by midday my thoughts are readily concentrated on the time of the train, the problem of getting to the town station by country bus or motor car, and so on. If, however, the problem is not one of urgent concern my thoughts are likely to wander. Consider the case of the pupil who is asked to solve a problem in Arithmetic; he does not care whether the supposed grocer in the problem is going to make a profit or a loss, and the mental situation here is very much like that which we discussed under the heading 'Volitional Attention', which, as we saw, is only possible when we have an interest in the *end* for the sake of which we attend to the *means*.

Thinking, then, like actions, requires a motive; and children must be interested in a problem to ensure, first, a flow of relevant ideas and, second, a continued effort to reach a solution.

Broadly speaking, the problems may be either practical or theoretical. Theoretical problems may, of course, have some practical application; but an adequate motive for the thinking out of theoretical problems may be mere curiosity. In more intellectual persons the mere desire to know the solution of a problem may be a motive sufficient to induce concentrated thinking. With children and many adults, thinking most readily takes place in connexion with practical problems which have to be solved.

Logic and the psychology of thought. Broadly speaking, we may say that the science of logic is concerned with how we *ought* to think: whereas in psychology we study how men actually *do* think. But it is legitimate for us to study the psychology of right thinking and the things which make us tend to think erroneously. Hence we must at times bear in mind the ideals of strict logic, though we must beware of dwelling too much on problems which are really those of logic or scientific method.¹

Essentials for sound thinking and reasoning. If our thinking is to be sound the following are most important: (a) correct and full concepts or ideas of the things (whether concrete or abstract) with which our thinking is concerned, and precise definitions of important terms; (b) the apprehension of the relations between the things or concepts we are dealing with; (c) the collection of all the facts relevant to our problem; (d) sound generalizations from these facts, and valid inferences from the facts and generalizations; (e) fruitful hypotheses based on the facts or on the inferences; (f) fair and complete testing of the hypotheses.

To secure all these in our thinking involves also a genuine desire for truth and some important qualities of character – restraint of emotions and the checking of desires and prejudices, which are apt to vitiate our efforts to think soundly and effectively. We must consider all these various processes in thinking in turn, together with the possibility of training in these aspects of reasoning.

The forming of full and correct concepts. The student will find the word ‘concept’ used in somewhat different senses by various psychologists and logicians. Thus one psychologist writes: ‘the concept is the sum total of what you know about the object’.² Others stress the fact that in a concept there is an element of the universal: that it refers to a class or that it expresses mean-

¹ One pioneer of modern psychology, James Ward, after protesting that logic has exerted a pernicious influence on the psychology of his day, himself often refers to the ideals of logical thinking in his excellent papers on thinking and logical training in *Principles Applied to Education* (Cambridge, 1926).

² R. S. WOODWORTH, *Psychology: A Survey of Mental Life* (12th edit., 1939), p. 543.

ing. The logician, concerned with *precise* concepts, would rule out much that a man may know about a particular object, say his own house, when considering the concept of a 'house'; the logician would emphasize that the concept of 'house' implies only certain qualities which are present in all houses, qualities essential if the name is to be applied at all.

It is not, of course, the task of the psychologist to discuss what are correct concepts; but he is concerned with the process of reaching them and with their importance in sound thinking.

Let us begin with an illustration of how a little child may, unguided, form a crude concept. One of my boys at the age of 1 ; 1 learned to call sparrows 'dickie'; he then of his own accord applied the term to other birds, then to flies, and finally to a bit of fluff floating in the air.¹ Now it might be said that 'dickie' meant to him any object behaving in a certain way – flying or floating in the air – and there is no psychological reason why this should not be regarded as the beginnings of a concept; but of course if he was to conform to custom and be able to understand others and communicate with them, it was necessary that the term 'dickie' (or bird) should be restricted. This he learned by our saying 'No' when he called 'flies' or bits of fluff 'dickie', and so he learned to restrict the use of the term to birds only, a process which would encourage comparison and the bringing out of the essential difference at least between a bird and a bit of floating 'fluff'.²

Our illustration has already brought out the value of language in the development of concepts, a point we shall refer to later. It also illustrates a danger, too, of ready generalization which remains at much higher stages of development and even among adults, when it shows itself in too great a readiness to apply a term on the grounds of a superficial resemblance, and

¹ C. W. VALENTINE, *The Psychology of Early Childhood*, 3rd edit., 1946, p. 264. Professor Leopold Stein describes such thinking as neither inductive nor deductive, but 'transcriptive', a form of reasoning by analogy characteristic of the child below 4½ years of age. See his book, *The Psychology of Intelligence* (1950), p. 126.

² He might have retained an idea of a general class to include birds and flies, and then term 'wings' there – suggested by James Ward, *Psychology of the Child*, 1926, p. 100. Children often do thus make general classes for themselves which are not in common use.

I explained was diagonal) I was astonished to find how correctly he could apply spontaneously the term diagonal in quite other circumstances – for example, when he moved across the lawn. Similarly, a good deal of language can be learned in the process of doing varied kinds of handwork if the instructor will talk to the child about the work from time to time as he proceeds.

That great pioneer in the reform of the teaching of Mathematics, the late Sir Percy Nunn, emphasised this value of familiarity with the concrete and its manipulation for the grasping of mathematical concepts. He wrote:

‘The mastery of a geometrical theorem would seem a purely intellectual performance; yet when the learner is bidden to “suppose the triangle ABC to be superimposed upon the triangle DEF”, it becomes clear that action, after all, is not really excluded. The reasoner does not actually perform the action, but it is evident that the argument carries conviction only because in his childhood he has done innumerable things of the same kind as he now supposes to be done, and is familiar with the results.’¹

‘It is hardly possible [he writes later] to over-estimate the value of practical work in teaching such subjects as mathematics, geography, and science, especially in the earlier stages. Even where practical work is not feasible, a theoretical argument should generally be presented in a setting of imagined experience, rather than in a purely logical exposition. The judicious use of the dramatic method in teaching history is parallel with the direct form of practical work; while to discuss the application of historical and political principles to present-day problems is to follow the indirect practical method which is generally more appropriate in teaching older pupils.’²

When once the concrete illustration is fully apprehended, then, of course, the intelligent child can pass beyond it and

¹ See his *Education: its data and first principles* (ed. 1911), p. 207.

² *Op. cit.*, p. 207.

generalize. Indeed, independence of the concrete illustration is the ultimate aim. Having studied various oblong figures, the child can —

'treat the particular figure not as particular, but as a symbol of all possible oblongs; yet cannot reach a general truth about oblongs except through contemplation of the symbol. The minds of children and of ill-educated persons do much of their thinking by the aid of things used thus as symbolizing concepts which would otherwise elude their mental grasp.'

'Here is the psychological justification for the use of models in teaching abstruse subjects. Undiscerning persons object to models on the ground that their use deprives the pupil of the stimulus to employ his powers of thought and imagination; but we see that on the contrary, they are for some minds always, and for most minds sometimes, the best possible means of stimulating activity.'¹

Definitions and examples. With the young child, and indeed with most adults, the best approach to an exact definition of a word is first to give varied examples. Thus the meaning of 'animal' is best brought out by such varying examples as dog, lion, whale, monkey, bee — assuming these are familiar to the child. Only then should we proceed to the precise definition, which should state all the essential qualities on the ground of which the name 'animal' is applied.

The understanding of abstract concepts. So far we have been considering largely concepts which apply to classes of things which can be seen in the concrete or at least can be abstracted through the observation of concrete objects. But what of those wider abstract terms such as 'justice' or 'democracy', concepts which are 'formed by comparison of other concepts', as Ward puts it,² or at least by the putting together of other concepts? How can we help pupils to understand such abstract terms?

Here we can at least start by describing and discussing actual examples of what we consider 'justice' or 'democracy';

¹ NUNN, *op. cit.*, p. 227.

² P. G. WARD, *A History of Education*, p. 46.

and we can discuss the essential marks of them and why we should admit the term in one case and not in another, as did Socrates in the dialogues of Plato. This process should lead finally to attempts at precise definitions of the terms. In attempting to explain abstract terms to children and to arrive at precise definitions, we must, of course, be careful not to use, in this very process, ideas which themselves are unfamiliar to the children. We must come down to his own concrete experiences as the ultimate basis of understanding. There is a danger even of attempting to define the unknown through the still less known — which the logicians refer to as defining *ignotum per ignotius*.

We must also beware of expecting too early in children the capacity to understand abstract terms. For example, it has been found that even a rough definition of such terms as 'kindness' and 'justice' cannot, on the average, be given by children below the age of thirteen, even if we accept such definitions of 'justice' as 'when you punish wicked people' or 'playing fair'.¹ That means that such definitions of abstract terms are beyond a good many of the thirteen-year-olds, and some of the fourteen-year-olds, but within the reach of the brighter twelve-year-olds. These, it should be noted, are definitions the child is supposed to have picked up in the course of everyday experience. By special explanation, it is, of course, possible to teach definitions so that they can be repeated verbatim; but the spontaneous development of the ideas gives us the best clue to what the child is ripe for at a given age.

It would be a helpful and usually surprising procedure for a teacher, before beginning the discussion of any subject in which are involved some special terms supposed to be understood through everyday use, to obtain definitions of these terms from his pupils: e.g., in History the terms king, parliament, 'the government', nation; in Geography climate, environment; in Scripture religion, faith, repentance, forgiveness; in English

¹ The definition of such abstract terms is one of the Binet Intelligence tests assigned to age of thirteen by BERRY in his revision of the Binet Test. *Scholastic Mind*, p. 152. FERMAN and MERRILL assign to age twelve the definition of the terms 'constant', 'courage', 'charity', and 'defend'. *Measuring Intelligence*, p. 269.

literature the terms imagery, metaphor, aesthetic, and so on.¹

Language and thinking. It will have become clear to the reader that we cannot discuss the development of thinking without constant reference to the development of language. Not that the two are identical; the pupil with the biggest vocabulary in the class is not necessarily the most accurate reasoner. For though the size of vocabulary correlates fairly highly with general intelligence, reasoning does so still more highly. Vocabulary depends considerably upon specific verbal ability, as well as, of course, upon environmental influences.

Psychologists are now generally agreed indeed that some brief processes of thinking can occur without language. That thinking, and the occurrence of words in the mind, are not identical is shown by the fact that we often pause to find the right word to express a thought we already have in mind: and we sometimes use the wrong word while *meaning* something else. Yet no one questions the great importance of language for clear and precise thought. It performs the following functions, in addition, of course, to the most obvious one of communicating ideas to others:

(a) Language helps the formation of concepts. A word forms a focal centre for the meaning – whether that meaning takes the form of images, or of suggested actions, or of other associated ideas.

(b) Words assist in the analysis of complex wholes. If we show a little child a penny, a plate, and the lid of a round tin he may realise that they are the same shape. If he does not do so spontaneously he may if we ask 'How are these alike?' If now he learns that the plate is 'round' and the penny is 'round' and the lid is 'round', the word 'round' provides a focal centre, a label by which he is better able to think of the shape as something distinguishable in thought from the concrete objects themselves, and he will, if his intelligence is adequate for it, apply the term to other round objects.

¹ The writer once found that a University student who had specialized in English literature for a year and a half, after taking a Higher School Certificate, thought that 'aesthetic' meant 'intellectual' or 'spiritual'.

(c) Language helps us to focus attention on ideas which would otherwise be difficult to keep in mind.

The reader may recall that psychologists have found it necessary to invent a term 'conation' to denote an aspect of mental process common even to processes in some respects very different from one another, e.g., a mild wish, a violent desire, a slight effort to solve a puzzle, or an intense effort to think out a scheme for escape from an enemy. These all involve conation. By means of the word 'conation' we are at least helped to retain the results of our comparison and analysis in mind, to think of it again more readily, and to inform others, familiar with the word and idea, of what we are thinking. The word also helps us to lead others to the process of analysis and of fixing the mind on a certain abstracted aspect of a complex whole.

On the other hand, sometimes language can mislead. Often it does so because the same word means different things to different people. Again, consider the following series - genius, clever, average, dull, mental defective, idiot. The special terms are apt to suggest to the uninitiated that these are definite classes clearly distinct from one another; whereas there is in fact a continuous series, separated by almost indistinguishable differences.

The building of vocabulary and the danger of verbalism. We have just illustrated the use of language as a means of stimulating analysis and abstraction in thinking and in leading to the formation of new concepts. We must now point out the danger of language developing ahead of genuine thinking, of words being used freely without any adequate meaning being attached to them. In an earlier paragraph we emphasized that children must have a background of concrete experience to appreciate the meaning of concrete terms such as 'river', 'sea', etc., and that inadequate illustration may lead to a wrong idea as to the meaning of 'castle'. Similarly, abstract terms may be 'learned' and may even be used correctly, so far as grammar is concerned, with only the vaguest notion as to their meaning. The common use of the word 'intuition' in popular psychology is a

good example; so is the use of the phrase 'equality of men' in many political discussions. Persons with a high specific verbal ability are especially in danger of this. Words seem to flow readily from their lips without their stopping to reflect on their implications, even if they could explain them when asked. The danger is especially great in discussions, in abstract terms, of problems which have a practical application to life; vague generalizations can sometimes best be met by asking for concrete illustrations.

In his famous experiments on the intellectual processes of his two daughters, Binet found a remarkable example of the verbalistic type in one of them, Armande. The daughters (aged thirteen and fourteen and a half) were asked by Binet on a number of days to write down any twenty words that came into their heads. Armande did not know the meaning of about one in three of the words she wrote down, whereas for Marguerite the proportion was only one in twenty.¹

There is the greater danger of 'verbalism' if we attempt to expand the vocabularies of children as an end in itself, apart from genuine thinking through the words involved. The old practice of giving lists of new words to be 'learned' is no doubt almost extinct: yet verbalism can be encouraged in ordinary teaching if we go too far ahead of the child's stage of development, whether in concrete experience or in general ability, including the capacity to grasp relations. Many 'howlers' of course are the result of immature concepts and misinterpretations of words.

Nevertheless, we must recognize the fact that the meanings of words are only learned by hearing them used, by reading them in the midst of other familiar words, and by attempting to use them even though they cannot be precisely defined. Some useful comments are made on this topic in a book on *The Language and Mental Development of Children*.² The author points out that general and abstract terms are at first used by children

¹ See his *Étude Expérimentale de l'Intelligence*. Allied experiments by Binet on 'Intellectual Powers' are discussed further on the next chapter on 'Imagination and Fluency', p. 312.

² By A. F. WATTS (London, 1944).

'Almost entirely with specific reference to certain particular situations. "*Punctuality*", for example, means coming to school at a stated hour, "*discipline*" means being ready to obey definite rules on given occasions, "*truth*" means saying precisely what you have seen or heard or done, and so on. In short, only as they bring to mind clear images (usually pictorial) of familiar forms of behaviour, do general and abstract terms convey meaning to any but the brightest of young children.

'This is not to say that general and abstract terms should be avoided by the teacher until they can be properly understood. In the field of conduct their role is all-important. It would be difficult, for instance, to say that we had any clear ideas of good or evil before we were introduced to them by name. What did any of us know of truth as opposed to falsehood before our parents urged us to respect it? What did any of us imagine was the difference between pleasure and happiness, between pride and vanity, and so on, before the existence of such pairs of words for related ideas suggested a difference between them?'

For genuine education of the child in thinking then we need two parallel processes, the constant widening of concrete personal experience and the extension of vocabulary even at times ahead of the spontaneous growth of thought to stimulate the formation especially of general and abstract concepts. In the more mature stages of youth and adulthood the attempts at precise definitions may legitimately become largely verbal - if first all are agreed as to the ultimate facts; and discussions as to how a term shall be used are of value for bringing out the fact that even common words often mean different things to different people. Such discussions also reveal how impossible argument, co-operative thinking, and genuine agreement are, unless the participants can first agree upon the precise meanings of the terms used.

Language and grammar. In this chapter we are concerned primarily with thinking and training in reasoning. From this point of view a uniform grammatical structure of the language

used in discussion is useful because it lessens distractions which are apt to be caused by aberrations from the customary forms of language. Attention is apt to be deflected from the meaning of words to their form or arrangement if they are not used 'correctly'. In some cases indeed, prejudice may be roused against a speaker because of his 'bad grammar' – as it may by his bad accent. For the sake, then, of efficient interchange of thought and the building up of collective agreements and understanding, familiarity with, and constant practice in, the usual grammatical forms and arrangements of the native tongue is essential. This is not the place to discuss the full value or the best methods of teaching English Grammar. But it is proper for the psychologist to point out that grammatical rules may be thoroughly understood and learned by a pupil and yet not applied in practice; custom is often too much for him. The best examples of this I have come across are the following:

In Northern Ireland a common error is to say 'putten' for 'put'. In a school examination pupils were once asked to say what was wrong in the sentence 'He has putten his feet on the table.' One youngster wrote: 'He's gone and putten putten and he should have putten put.' The correct form was known, yet the habitual one was used. One Scottish teacher indeed, told me that to correct the frequent use of 'went' for gone (as in 'he has went home') he once set a boy after school to write out 'He has gone out' fifty times. The master after a time left the boy to himself. On his return he found the imposition on his desk – 'He has *gone* out' duly written fifty times: but the boy had added 'I have done the work, and I have *went* home.'

The apprehension of relations. So far in discussing thinking and the building up of concepts we have been dwelling on the results of experience and training. But several times we have had to insert such phrases as 'if the child is intelligent enough'. It may be well, then, to recall that advance in thinking at all stages is largely dependent on the innate general intelligence of the child, and particularly on his ability to grasp relations between things or ideas – that capacity which above all others seems to depend on innate general intelligence; for, as stated in an earlier chapter, no tests of intelligence are so near to pure

tests of the general factor (or 'g' as it has been labelled) as are tests concerned with the grasp of relations, e.g., the giving of opposites, the analogies, tests of reasoning, and so on.

This apprehension of relations is a fundamental capacity and tendency of the human mind.¹ Thus, if I present to the reader the words 'good' . . . 'bad', there tends to spring to mind the idea of the relation 'opposite'. ('Good' and 'bad' are termed the 'correlates'.) If I see a photograph of a man rather like my brother the idea of 'similarity' is likely to occur. Some vague apprehension of relations may be involved in the building up of concepts, even at very early stages, though we are discussing it after dealing with concepts. Such apprehension of relations is indeed concerned with concrete objects as well as with ideas.

Little children in the third year can obey the instructions to put a card *on* a box, *under* the box, *in* the box, or *behind* the box, thus showing that these spatial relationships can be apprehended. That is an example of the way in which relations may be apprehended between material objects and not merely between ideas.

The most fundamental and elementary relations grasped are indeed those concerned with material objects rather than ideas, taking place on what is called the perceptual level of intelligence.²

Actual objects or figures have also been used in tests of the grasp of relations. Thus the analogies test has been put in the following form.

\square is to \square as ∇ is to which of these \triangleright \circ Δ ?² A child may be able to do this test correctly even if he does not know the names of the figures. It involves the apprehension of the relation between \square and \square and the recognition that a similar relation exists between ∇ and Δ .

All these different processes exemplify the general tendency of the mind to apprehend things in some relation to one another. It is so fundamental that the grasp of the more elemen-

¹ I say 'a fundamental capacity', but I would mention that Bortkiewicz states that there may be a limit to the number of relations that can be apprehended by any individual. See *The Psychology of Education*, p. 100.

² Adapted from SPEARMAN, 'Nature of Intelligence', p. 11.

ary relations, e.g., likeness, difference, causality (provided the material is simple enough) may appear in intelligent children by the age of about four or five, though in mental defectives the capacity is very limited.¹

Ordinary work in school abounds in examples in which the grasp of relations and their correlates is important. Thus all but the most purely mechanical arithmetical work involves relations, so much so indeed that some problems in Arithmetic are themselves a fair test of general intelligence provided the material is simple and the type of problem not too familiar. Geometry clearly involves spatial and quantitative relations. In reading and in English composition we come to more complex relations between whole sentences, each of which may itself also involve several relations. The supplying of the correct conjunction between two sentences may form also a good test of general intelligence; for example, filling in the blanks in the following:

'I must wash my hands —— they are so dirty.'

'I was cheeky to the teacher —— he did not punish me.'

The relations expressed by the conjunctions 'although' and 'indeed' are more difficult to grasp.² Difficulties are also increased when several conjunctions link up various sentences which bear some relation to one another. Thus:

'The Captain stood on deck to the end —— the ship was sinking —— he had a wife and three children at home.'³

The process of reasoning. The grasp of relations is the essential element in reasoning. As the result of testing many children with simple tests in reasoning, Burt concluded that: 'All the

¹ We shall discuss the appearance of the grasp of relations again in the chapter on Development in Infancy. See also my *Psychology of Early Childhood*, Chapter XXI.

² Even University students use conjunctions quite wrongly at times, and a continuous programme of the conjunctions tested out is a good test for them. See my *Elementary Psychology*, Part I, Chapter XXIII.

³ One youngster to whom I gave this test filled it in, as follows: 'The Captain stood on deck to the end of the ship as sinking because he had a wife and three children at home.' Whether this was lack of 'g' or poor memory exercise I leave it to the reader to guess.

elementary mental mechanisms essential to formal reasoning are present by the mental age of seven.¹ It is in familiarity with the subject matter, and the ability to grasp more complex ideas sometimes involving relations between relations, that further advances take place. This grasping of complex ideas by a person depends, as Burt says, on 'the degree of organic complexity of which his attention is capable', attention here being used as including 'marginal as well as focal awareness; and awareness as sustained over long periods, not as occurring in brief pulses'.²

We have already stressed, in the chapter on 'Attention', the importance of this span of apprehension and the fact that it is dependent partly on innate ability and partly on familiarity with the particular material. In a problem in Arithmetic, if a child's attention is diverted partly to the less-familiar meaning of dollars and cents and their relations, he will be less able to concentrate on the essentials of the problem than if it refers to thoroughly familiar shillings and pence.

Unfamiliar things and their relations can be learned about and by practice become more familiar - and part of the teacher's work is to call attention to relations and to get them expressed clearly; but an inborn deficiency in the child's ability to grasp any except the most simple relations, or to hold two or more related ideas in mind together, puts the limit on the possibility of training in, and improvement in, thinking, and especially in reasoning.

Such inability to deal with relations and related things may occur when the things are concrete and familiar, and not merely when they are abstract ideas which have to be expressed in uncommon words. Perhaps we may best illustrate what is meant by one of the reasoning tests Burt assigned to the age of nine.

'If I have more than a shilling I shall either go by taxi or by train: if it rains I shall either go by train or by bus. It is

¹ C. BURT, 'The Development of Reasoning in School Children', *J. Psychol.* **1919**, *5*, p. 127.

² *Op. cit.* BURT adds that 'apprehension' would be a better term than attention.

raining, and I have half a crown. How do you think I shall go?"

Here are quite simple and familiar ideas. But having grasped the fact that it is raining, you must pass to the consequence that I shall go either by train or bus. Then you must return to the fact that I have more than a shilling and so shall either go by taxi or by train. Then you must bear in mind what you have already discovered that I am going either by train or bus; and thus the only means which is permitted by both conditions is the train. In such a process there must be a ready passing from one idea to another, then holding them together in the mind, and grasping their interdependence, and so on if the problem is to be solved.

All this is clearly connected with what we said about the span of attention or apprehension and the differences between individuals in the capacity to hold relevant ideas in the near margin of the focus of attention and readily bring them to bear on the central problem when needed.

The whole process of dealing with relations in reasoning is admirably summed up from another point of view by Burt in commenting on the dull child's failures. 'Broadly speaking, the dull child seems to fail in three main ways: first, from sheer inability to single out and see relations: secondly, from inability to combine the relations and the related data into a systematic whole, particularly where the whole involves some degree of complexity; thirdly, from inability to sustain the directing idea which should guide the evolution of his apperceptive processes, both in analysing the whole and in building it up again.'¹

The grasp of relations between relations is a mental process still more difficult, as many have found in this well known puzzle.

A man stands in front of a portrait and says,

'Sisters and brothers have I none,
Yet that man's father is my father's son.'

What relation was he to the man in the portrait?

¹ C. BURT, *The Backward Child*, p. 525.

Dealing with several different relations at once, is especially difficult. For example, one of Burt's reasoning tests is as follows, 'C is smaller than B: B is smaller than A. Is A greater than C?'

This is found suitable for the average nine-year-old. But a slight change in the test makes it harder. Thus:

'A is larger than B and B is smaller than C. What does this tell us about the size of C as compared with A?' Here in the statement of the given facts we change from the relation 'larger than' to the opposite 'smaller than', and at once the mental process is more difficult.

Again consider the simple test assigned in the Binet tests to children of six: 'Which is your right hand? Which is your left ear?' If now I stand opposite the child and ask him, 'Which is *my* right hand?' the test is much harder. He has to judge the problem in relation to me; my right hand is on his left – an elementary example of relativity.

Relativity and proportion are also evident in the following test, assigned by Burt to eight years. 'Edith is fairer than Olive, but she is darker than Lily. Who is darker – Olive or Lily?' One investigator who applied this test reports as follows:

'Instead of tackling the matter by means of judgements of relation, i.e., by making use of such expressions as "fairer than", etc., the child deals simply in judgements of membership of a class and tries to find out with regard to the three girls whether they are fair or dark (speaking absolutely). It is exactly as though he reasoned as follows: Edith is fairer than Olive, so they are both fair; Edith is darker than Lily so they are both dark: therefore Lily is dark, Olive is fair, and Edith is between the two.'¹

Here the thinking seems to be dominated by words and labels, as it often is even among adults. Thus a politician may declare that both Communists and Socialists are anti-Com-

¹ J. P. V. & J. J. Bennett, *A Research in the Child*, p. 28. Much material of interest will be found in the book by Piaget, *Intellectual Evolution of the Child*, trans. by M. Warden, 1932, pp. 100–102, which shows that the same process can occur in some but not all children at a much earlier age than he gives.

servative, and a dull or lazy hearer may thenceforth regard them as the same, though the speaker may have added some points in which they differed from one another.

The collection and marshalling of facts relevant to a problem. This was the second item we mentioned above among essential aspects of sound thinking. Clearly this involves the acquiring of relevant knowledge, and the recalling, marshalling, and facing honestly all the facts bearing on the problem at hand. Here we meet a large and sometimes endless task. For as to many problems, especially the complex problems of human affairs, who can say when he has all the relevant facts before him? Increasing knowledge often shows us extending horizons of further knowledge which may be essential before we can be certain we can come to right conclusions.

Sometimes we can at least, by cautious and critical examination of the facts before us, be fairly certain that more are needed for reliable conclusions; and as we shall see directly, such qualities as self-restraint, the refusing to jump to conclusions, and the willingness to suspend judgement until further facts are known, are vitally important in the process of sound thinking. But let us begin with somewhat simpler types of task — the observation of things present to our senses or the noting of facts which are 'before our very eyes'. Even this is not so simple a thing as it may appear, as is recognized by the saying that 'some people cannot see facts which are staring them in the face'.

Observation and the noticing of facts. Sometimes it is no reproach not to see things 'staring one in the face'. There is a familiar catch question — 'What figures represent four o'clock on an ordinary clock face?' Most people erroneously write IV, whereas it is almost invariably III. But a man looks at a clock to see the time; his purpose is no better fulfilled by noticing the precise figuring. The exact position of the III on the clock face is the important thing, for if he knows that, he can often tell the time in a dim light when he cannot see the figures.

All this recalls what we said in Chapter II about observation. We saw that it was guided by interest and knowledge, and so are the noting of facts and indeed the search for facts. For

both observation and search must be guided by an end in mind, namely, to note what is relevant to our purpose and problem. In the old type of 'object lesson' something was shown the children - perhaps a plant or a stuffed bird - and they were asked to describe it and note all the parts; but this was apt to become an uninteresting bit of rote learning. The same error may be made in studying, say, botany. The mere observation of the parts of a plant, their shape and colour, and the learning of their names, need to be supplemented by a discussion of their functions.

Instruction as to weapons in the Army has often suffered from the type of error mentioned. The study of the Bren gun, for example, was apt to begin with calling attention to its numerous parts and naming them - a process I personally found simply dazing. But when the way in which the gun worked was explained, bringing in only each part as needed, not only understanding was begun but actually the results of observation were also better retained.¹

Of course when some understanding of the general working of a plant or machine has been reached there may be a place for exploratory observation. Some part may be noted of which the function has not yet appeared and there is a stimulus to curiosity. Similar principles apply even to the observation or study of a play of Shakespeare. At first the words and actions of a particular character are of little interest to the pupil if he does not know the plot or the particular part a certain character has to play in the development of the drama. When once the main plot has been grasped and the villain's part is clear, how much more significant become some of the things he says in the first scene, and even small actions of his take on a new meaning. Far more will be observed and noted on a second reading or seeing of the play.

¹ That the rote learning of parts of weapons with too little emphasis on functions and too little time for a man to explore the working of a weapon himself were common faults in army instruction was shown in an extensive inquiry I made among former students of mine in the Army. An account is given of the results in my little book, *The Human Factor in the Army* (Gale and Polden, 2nd edit., 1954). We have already seen the bearing of this on the acquisition of skills.

Precise in observation or in the noting of facts. Suppose instead of watching an actor in a play I am observing from time to time the behaviour of a man in real life. If I am a devoted friend of his I am likely to overlook weaknesses, and to note especially and remember good points. If, on the other hand, the man has done me an injury there is a danger that I shall ignore the good and fix eagerly on the bad. Love is notoriously blind to the defects of the loved one; and those strongly prejudiced against a man are apt to ignore his good qualities and deeds or interpret them as pretence; and they are apt to believe the worst about him on the flimsiest evidence.

It is said that Darwin felt so strongly the danger, even to the scientist, of prejudice in collecting facts, that he made a special point of recording facts which seemed to be contrary to the theories that he held. Such an attitude is alas all too rare in the affairs of everyday life. One has only to examine some political speeches, or listen to discussions among strong supporters of rival social or economic or religious views, to realize how often facts which fit in with the speaker's own views are recalled, while those which would raise difficulties are ignored. Persons who are usually reasonable may become heated, dogmatic, and irrational when a particular topic comes up on which they feel strongly - say politics, or religion, or equal pay for men and women. I have noticed that one person who equalled the best in a large group of a hundred graduates in reasoning tests, degenerated into most illogical reasoning when matters of emotional concern were involved. Similar aberrations are not unknown in arguments in committees consisting of university professors.

One important part of training in sound thinking is to bring home to pupils such dangers of prejudice as we have just indicated. It may well be that none of us can entirely rid himself of the influence of bias in thinking; but at least if we really wish to be honest in our thinking, we shall be more likely to be so if we are aware of the possible influence of bias.

The suspension of judgement till all relevant facts are known. This is another ideal which should guide our thinking. Here again some psychological tendencies work against the ideal. As we

have seen in an earlier chapter, suspension of judgement is often unpleasant. A man tends to swing definitely towards one view or another if his personal interests are at all concerned in the problem at issue; and if to wait until all the evidence is before us is difficult, it is still more irksome to search out all the facts for and against the view we are considering. This is especially so if we are concerned with human problems - social, economic, political, or international, about which inquiry and research may be interminable. Practical urgency may indeed compel us to act sometimes when we know the evidence is not as complete as it might be. None the less, suspension of judgement till all the relevant facts are known remains the ideal if our thinking is to be sound. And here I would recall what was said about the limits to the use of suggestion (Chapter VIII, p. 103). The teacher must himself beware of encouraging by suggestion the adoption of views without fair examination of facts and impartial reasoning, and he should gradually lead the pupils to be independent of his own influence in their thinking.

Generalizations, inferences, and hypotheses. These were the next aspects of thinking in our list. But here I should like to emphasize that these various aspects - the forming of concepts, the grasping of relations, observation, and the collecting of facts, and now generalizations and inferences and the formulation of hypothesis, all these must not be taken as a series of divided steps in the process of sound thinking. They are closely intermingled and usually progress together; thus the finding of new facts may modify a concept previously formed; and a sound generalization and the formulation of a hypothesis may send us back to find more relevant facts and so on. The formulation of a concept is indeed itself a generalization, and may be reached by the observation of a group of objects.

To discuss fully the nature of generalization or of valid inference would involve a long digression into logic. We can only touch on some psychological aspects, and especially on the ways in which the mind may be led astray from the path of **sound thinking**.

Premature generalization based on incomplete knowledge of the facts is a common error. Often people argue from super-

ficial analogy: or from the concurrence of two events which may be accidental. A man has a bad dream and then remembers that he had cheese for supper. He may conclude that cheese causes bad dreams and indeed that all bad dreams are due to cheese, forgetting that he has had bad dreams other nights when he had not had cheese for supper, or that he had sometimes had cheese for supper without having a bad dream.

In everyday problems and in reasoning about social or economic problems and human affairs in general, men are very apt to be guided, as in the above example, by coincidences, or by superficial analogies. As an ideal for precise reasoning it is well for older pupils to have set before them some essentials of scientific method, whether they are studying natural science or not. Here again we cannot digress at length, but can only give two samples.

Scientific method and the training of reasoning. Suppose we wish to discover the conditions necessary for seeds to germinate; we may put a few beans in some soil in each of two saucers, placing them in a room of constant moderate temperature, and in the daylight. We keep the soil in one saucer thoroughly moist, that in the other quite dry. We notice that the beans in the moist soil begin to germinate and the others do not. From which we conclude that moisture is essential for germination.

Here we have made *one* variation only in the conditions, and we are justified in concluding that moisture is at least essential; but we cannot, of course, conclude that other things are not essential, and similar experiments must be done, varying only the temperature at one time or the light at another, and so on. This is a very crude description of a simple experiment. The whole subject of scientific method is, of course, far too great for us to discuss in one chapter, nor is a book of psychology the proper place for it. But it is, as already pointed out, necessary to consider logical and scientific procedure, in order to bring out the tendencies in the human mind to rest content with much less than scientific demonstration for many of its conclusions and beliefs. No doubt the most important affairs of everyday life have to be settled on the basis of probability and not complete demonstration. Nevertheless, we ought to be made

aware of the tendency to loose thinking. Suppose, for example, a man suffers from indigestion and buys a bottle of some patent medicine; he takes the medicine, but he also obeys the advice on the leaflet given with it, to avoid drinking much at meals, to masticate his food thoroughly, and to walk at least two miles a day. His indigestion passes away and he often tells some friend what splendid medicine that is. Such is the tendency to ignore the existence of various alternative causes of an event, or of several causes working in conjunction.

It is well that such principles of scientific method, and certain elementary logical principles and typical fallacies in reasoning, should be put before senior pupils. Yet we must confess that even this will not ensure sound reasoning on topics remote from those in which the methods are learned. In other words, there is not always a 'transference' of the results of specific training – just as we found with the supposed 'training of observation' and the 'training of memory'. Even distinguished scientists may lapse into loose thinking when dealing with topics outside their special subjects. Thus I heard one Fellow of the Royal Society generalize as to bad modern methods of teaching Arithmetic, largely on the evidence of his two children's experience in a private school. Even such a brilliant mathematician and philosopher as Professor A. N. Whitehead, in discussing the value of Latin studies in school, wrote: 'According to the testimony of schoolmasters Latin is rather a popular subject. I know that as a schoolboy I enjoyed it myself. I believe that this popularity is due, etc.'¹ Here an assumption of the popularity of Latin is made on the evidence of his own experience and the remarks of a few schoolmasters. How unreliable the generalization was is shown by the evidence I have given (in Chapter XVI, p. 204) as to the widespread unpopularity of Latin in Grammar Schools. Certainly Professor Whitehead would not be content with such slack reasoning in a natural science. Another striking example is the following. That distinguished mathematician and philosopher Bertrand Russell, in his book *On Education*, suggests that an inclination he experienced towards suicide during

¹ See *Aims of Education* (London, 1929), p. 99.

adolescence was due to his solitary education. He bases this idea on his own experience and that of J. S. Mill. Yet I have found that some 38 per cent. of my University students report suicidal tendencies during adolescence, though of course only a negligible proportion of such students are educated privately. We see the need, then, both for the study of the relevant facts concerned with specific subject and for a study of the typical fallacies likely to be made in dealing with all important types of human problems. For example, we have seen that in psychology and education, attention must be drawn to the special danger of *selection* in collecting our examples: and to the fact of great psychological differences between individuals and so on.

The examples just given show that even a thorough training in science or mathematics does not *ensure* that equally precise and accurate reasoning will be applied to all human problems. This raises again the question of the transference of effects of specific training, to which we shall now turn.

Does specific training in reasoning about one subject affect all reasoning? We have just seen that even very able men with a long training in reasoning in science or mathematics may lapse into lax or fallacious reasoning when dealing with other subjects. It might nevertheless be true that there is some general tendency for such specific training to have some effect on reasoning on all topics. The claim is made chiefly on behalf of mathematics, science, and classics. We have not space for a detailed discussion of all experimental work bearing on this topic, but I shall try to follow the plan mentioned in the preface and which I have kept in mind throughout this book, of only stressing points of agreement among psychologists. I have already quoted the findings of a committee of psychologists on the doctrine of 'Formal training' – the supposed transference of effects of specific exercise in training.¹ If we apply their general findings to the question of training in reasoning we may reasonably conclude that there will be a general effect of specific training in reasoning (say in a natural science) only when some principle learned through the study can be applied to other facts; for example,

¹ See Chapter II, p. 27.

the general principle of experiment mentioned above (that *one* factor only should be changed at a time and the results noted) might be applied to reasoning about human nature where possible.

More recent experiments (since the report of the psychologists referred to) emphasize the importance of such *conscious* use of general principles and methods, if there is to be any transfer. Thus, one eminent psychologist, in summarizing experimental work in this subject, though himself clearly seeking for elements of truth in the doctrine of transference, wrote: 'Geometry has transfer value in so far as its logical principles are consciously recognized and applied.'¹

Let us examine further one research which Professor Hamley described as the 'most significant work on the subject that has been carried out in this country'. It is on 'Consciousness of Method as a Means of Transfer of Training'.² It deals only with one element involved in reasoning but an important one, definition, and it illustrates the general principle we have just mentioned. The author divided a class of sixty boys (seniors) into three groups of approximately equal intelligence. All groups were first tested in their ability to define twenty ordinary terms (e.g., property, locomotive, parliament), the marking being based on the correct form of the definition. Groups B and C now had several lessons in elementary magnetism in which they had to write down their definitions of a magnet, etc. Group C had their attention specially drawn to the fact that a definition should include all that the word means and exclude everything else, and their definitions were discussed. Group A was a control group and had no lessons in magnetism or special training in definition.

Finally, all the groups were asked to define twenty other common terms. The results of the control group A showed that the terms in this second list were at least as hard to define as those in the first list. But group B, in spite of their exercise in defining, were slightly worse than group A. Group C, however,

¹ H. R. Hamley in his article, 'Formal Training, a Critical Survey of Experimental Work', *B.T.P.*, 1927, 6 p. 23.

² Article by G. P. Morgan in *The English Teacher*, 1927, Vol. V.

were greatly improved and were now much better than groups A and B, though they had been slightly weaker than A and B in the first tests on defining ordinary words.

Now it should be noted:

- (i) That group C had really had the equivalent of lessons in elementary logic.
- (ii) That the mere exercising of group B in defining had no effect on their defining other terms than those dealt with in magnetism.
- (iii) That there would seem to be no reason for supposing that C need have had the lessons in magnetism to secure improvement, provided that they have had the brief talks about what a definition should be. In short, the more general the training is, the more likely it is to have a general effect. Clearly, mere exercise in the process of defining was not enough for transfer. Nor have we any evidence that exercise in the whole process of reasoning about natural sciences will improve reasoning in politics or economics, unless general principles are consciously isolated and consciously related to the new material. Even when the general principles of logic are grasped they need not necessarily be remembered and applied in reasoning on all things, but at least they are more likely to be.

If there are limitations in the possibility of a general training of reasoning through science or mathematics, there are even greater limitations to the possibility of a general training through the study of foreign languages. Great claims have been made for the value of such training through translation from and into Latin. But here the reasoning is largely about rules of syntax, etc., and this is even more remote than is natural science from problems of everyday life. The fact that brilliant classical scholars do so well in other studies and activities is explainable on the grounds that a very high degree of intelligence is required for first-class work in classics.¹

¹ In an inquiry into the subsequent performance in other studies of first-class honours students in classics at Cambridge University I found they did no better than students who had obtained first-class honours in history, modern languages, mathematics, etc., and then turned over to a new subject. See my book, *The Reality of Examinations* (London University Press).

An experiment with the teaching of logic. I will conclude this discussion on the transference of training in reasoning by a brief description of an experiment with the teaching of logic in school. In a Central School seventy-five boys (average age nearly thirteen years) were tested and divided into two groups approximately equal in average intelligence. For three months both groups, control and experimental, had the usual lessons in grammar; but the experimental group had also an hour's lesson a week in logic – classification, definition, deduction, etc. At the end of the three months both groups were tested in: (a) a reasoning test, (b) Ballard's 'English Construction Test', and (c) writing a composition.

In the reasoning test the experimental group did much better than the control group; but it must be noted that there was a close resemblance between the material of the test and that of some of the logic lessons. In the 'English Construction Test' – a test in the logical arrangement of parts of sentences – the trained group also did decidedly better. The English Composition (marked by three experienced markers independently) was marked for clear expression and well-connected thoughts. Even here the 'Logic' class made a significantly higher score than the control group.¹

Here again we have evidence that a general training in thinking results in the greatest improvement in material closely allied to that in which the training was given, but that training in the conscious formation of *general principles* of clear thinking can show itself to some extent in thought and its expression when the form of material is different from the exercises in which the training is given.²

Summary on the training in thinking. As this has been a long

1932', p. 191. I have discussed in some detail the possibilities of a training in reasoning and in carefulness in the use of language through the study of Latin, in my book, *Latin. Its place and value in education*. University of London Press, 1935).

¹ Significantly in a statistical sense; that is calculations show that the likelihood of the difference between the scores being due to mere chance is extremely small. See Appendix, p. 634, for a note on 'significant differences'.

² For a full account of the experiment see article by E. E. WURTE, *B.J.E.P.*, 1936, 6, 267.

chapter, it may be useful to sum up the main points, with the practical aim of training especially in view.

(1) First, we must bear in mind that a motive is needed for reasoned thinking. To urge a child to think when he sees no problem or does not care about it is of little use.

(2) Second, as a basis for sound concepts, the child should have, as far as possible, first-hand experience of objects of the external world. Failing that, representative illustrations should be provided. Abstract concepts also require first varied examples and then a discussion of meanings, leading to precise definitions.

(3) With this should go the gradual extension of vocabulary, care being taken that mere verbal fluency is not mistaken for genuine thinking.

(4) The kernel of reasoned thinking is the apprehension of relations. This depends primarily on innate general ability. A low degree of 'g' means a limitation to the possibilities in the training of reasoning, especially when concerned with complex relations and relations between relations, as for example, the idea that the superiority of A to B is greater than the superiority of B to C.

(5) Reasoning, however, depends also on familiarity with the material concerned, whether concrete or abstract; so there must be specific training for specific subjects. We cannot provide an adequate training in reasoning about economics or social problems by a training in mathematics or Latin.

(6) Some general principles of logic and scientific method can be stated, and practice given in applying them to different types of problems.

(7) Each department of human thought has its own characteristic fallacies and pitfalls. A high degree of ability and advanced training in classics or mathematics does not ensure sound reasoning in psychology or education. In education for citizenship typical fallacies in social, economic, and political thought should be studied.

8. A knowledge of the particular subject is also required if we are to know what kind of facts to look for.

(9) Insistence on first knowing all the relevant facts before forming a judgement is largely concerned with qualities of character. The dangers of prejudice and suggestibility must constantly be emphasized; so must the opposite errors of (a) inert clinging to conventional beliefs without reason and (b) accepting uncritically an idea simply because it is new and interesting.

(10) For full consideration of prejudice or wishful thinking we must bear in mind even unconscious influences and the danger of 'rationalization', i.e., finding and giving conscious reasons for one's views or actions when they are partly or largely determined by unconscious motives.

Transference from the point of view of Gestalt psychology. Advanced students may like to consider the problem of transference of the effects of training from another type of approach, that of the *Gestalt* psychology. This involves a different terminology, which the student may meet sometimes in his general reading; but he should note that new terminology does not necessarily imply new ideas. Thus the *Gestalt* psychology applied to learning makes much use of the term 'insight', as we saw in the section at the end of our last chapter. This is defined (in James Drever's *Dictionary of Psychology*) as 'awareness of the relevance of behaviour to some end or objective'. Insightful learning contrasts with learning purely by 'trial and error'. We saw an example of it in the report of Kohler's ape when the animal suddenly saw the new possibilities of the use of *two* bamboo canes stuck together (see our p. 275).

Now our examples above in this chapter of the apprehension of 'principles of method' or 'ways of procedure' might be labelled examples of insight. But the *Gestalt* psychologists insist that such 'insight' may be evident not only in the realm of conscious ideas but also on a merely perceptual level.

CHAPTER XXII

IMAGINATION AND FLUENCY

The meaning of 'imagination'. In our last chapter we saw that the forming of hypotheses to explain observed facts was an important element in constructive thinking. In such forming of hypotheses we have something new demanded of the mind. It is not mere reproduction. We need in fact what is usually called 'constructive imagination'. (The reader may recall here or if necessary re-read the brief paragraphs in Chapter III, dealing with the supposed 'faculty' of imagination.) Psychologists now tend to speak rather of 'originality of ideas' or of 'facility in eliciting novel correlates' rather than of imagination. Much of what was termed 'imagination' has been shown to be really dependent on general intelligence, though there is evidence of certain mental factors which do correspond to some extent to the popular conception of imagination, which we shall study shortly.

First, however, let us note the importance of relevant knowledge in the formulation of hypotheses in thinking.

Knowledge and imagination in the formation of hypotheses. In the example I gave above of the man who concluded that cheese caused him to have bad dreams, the man's reasoning, as we saw, was very loose; but however carefully he had noted the conditions which preceded bad dreams and those conditions which were followed by pleasant dreams or no dreams at all, he could never have approached to a genuine theory of dreams without the formulation of a hypothesis, including one which has only occurred to a very few thinkers in considering the cause of dreams.¹ The Freudian theory that dreams are often partly due to repressions in waking life was only reached after

¹ I say 'few' because Freud was not the only one. Plato anticipated Freud to some extent when he wrote of the 'appetites' becoming rampant when the 'rational' controlling part of the soul is asleep. See his *Republic*, para. 571. I have commented on the passage in my *New Physiology of the Imagination*, p. 93.

considerable study of dreams; and I mention that to bring out the fact that the formulation of hypotheses is partly a question of thorough familiarity with the matter concerned. The idea that for useful imagining it is desirable that the thinker should be unhampered by previous knowledge and ideas on the subject is almost entirely wrong.

In the example given on p. 302, Bertrand Russell too readily formulated his hypothesis about suicidal tendencies and solitary education, because he was ignorant of findings about the frequency of such tendencies among adolescents; this again illustrates the fact that the formulation of sound hypotheses to explain things does not depend merely upon a 'brilliant imagination' but on relevant knowledge.

Relevant knowledge, however, is not enough for the formulation of new hypotheses in the development of science, or for creative work in art and literature. These can only take place at a high level of mental activity; yet in a child of only average intelligence the first spontaneous occurrence of a new conjunction of ideas (not suggested to him by another person) is also a bit of constructive imagination – a mental process of the same *type* as that of the creative thinker, however great the difference in value may be.

In the case of the inventor or the constructive scientist or the creative poet, thinking does not proceed along lines of humdrum commonplace associations. It is the mark of genius especially to see unexpected resemblances and analogies, to see relations between things which others have not seen. Suggest the ideas 'life' and 'eternity' to an ordinary man and ask him what comes into his mind, and he may reply 'Life is short and eternity long', or perhaps 'After life on earth comes eternity in heaven'. To the poet Shelley thinking of the death of Keats there came the surprising words:

'Life like a dome of many coloured glass
Stains the white radiance of eternity
Until Death tramples it to fragments.'

Here are imaginative ideas such as are the mark of a creative poet: certainly they are quite off the beaten track. But without

considering the poet of genius we may find very different types of thought sequences, as we shall see shortly.

Forming hypotheses to explain facts. In the kind of imaginative thinking we have just been considering, there was little control of the thoughts by the necessity to conform with well-known facts: though the poet's imagination must be subject to certain limits of consistency, of resemblances in his imagery to the thoughts he is representing, and so on.

In the case of the scientist or an ordinary man trying to find an explanation for some puzzling event, the situation is different. The scientist may let his thought play round his problem. His mental associations take place in a controlled way because they are dominated by the facts before him and the problem to be solved. Yet there is a similarity with the poet's mental process in that the associations do not take place in a mechanical, repetitive way. There is a 'liveliness' in the ideas that occur. Most of the ideas may have to be rejected because they prove not applicable — they will not 'fit' the known facts and provide a solution. But at least they give a better chance of a solution being found.

Now probably no training of imaginative thinking can be given in the sense of increasing such mental liveliness. The variety of 'guesses' may be increased by increasing relevant points of knowledge: for that gives a man more jumping-off points. Increase of relevant knowledge will also check the wildness of the guesses. But a fundamental difference will remain between the man whose ideas tend in the main to follow slowly along familiar commonplace tracks and the one in whom will occur rapidly varied ideas as to possible causes of an event, or explanations of puzzling phenomena, or out-of-the-way analogies of ideas which may be suggested by a given idea, and so on. Flashes of insight often appear to be the result of unconscious processes — for example, the solution to what seemed an insoluble problem overnight may come to mind suddenly on waking. But apparently sudden constructions of new thoughts are only possible because of long processes of conscious thought preceding them. For the ordinary man the problems of everyday life and the study of a subject which involves much

reasoned thought, e.g., politics, philosophy, psychology, need time for rumination, for 'chewing the cud', for cross connexions of thought to occur, for things to fall into patterns, and so on, which is another reason for the inferiority of so-called 'intensive courses'.

TYPES IN THE FLOW OF IDEAS

We may illustrate the difference between some of the mental types just mentioned, by the famous experiments made by Binet on his two daughters Armande and Marguerite (already referred to briefly in the last chapter, p. 289). Binet got his daughters to complete sentences beginning with a few words (italicized below) given to them, such as the following:

Armande

'I am hastening to write to you, for I have scarcely any longer to live.'
(Age 13.)

Marguerite

'I am hastening to finish my tasks in order to have time to play afterwards.' (Doubtless a statement of fact.)

'The house is on a height whence one sees a precipice, then a town of which one hears feebly the dull and distant noise.'

'The house is warmed by a good hot-air stove.' (A true statement concerning the house in which she was writing.)

Similarly, one of my students wrote: '*I am now an old man.*' (She was a young lady of some twenty summers.) While some wrote quite truthfully, '*I am now* doing psychological experiments.'

Individual differences in the flow of ideas may also be studied by getting the subjects to write down lists of all the words occurring to them, starting with a given word. The following are the lists of two students well known to me whom I started with the word 'Life':

A. (Man)

'Life'	→	Death
Wealth	→	Happiness
Kindness	→	Sorrow
Love	→	Hope
Faith	→	Reason
Obedience	→	Malice
Mother	→	Virtue
Death	→	Inequality
Eternity	→	Finite
Past	→	Present

B. (Woman)

'Life'	→	Death
Happy	→	Great
Color	→	Feeble
Imagination	→	Churn
Lovely	→	Gathering
Chairs	→	Leaves
Gracious	→	Candy
Evergreen	→	Holiday
Fairy	→	Angel-like
Wings	→	Birds

Note the contrast. A's list follows a fairly consistent line of thought throughout, and largely consists of abstract terms, most of them relating to major aspects of life. B's list has surprising breaks. Note the apparent jumps from 'great' to 'come' and from 'gorgeous' to 'chilly' and then 'evergreen'. Like Armande in her list of words, B could not explain some of these jumps. I knew on other grounds that this student B was an undoubted verbalist, with a rapid flow of language, and so emotional that, though she had a very high intelligence quotient, she was often apt to introduce logically irrelevant ideas into her essays, though the sequence of ideas appeared to be limited by emotion or feeling and by particular verbal associations. A, on the other hand, as I knew on other grounds, was slow in expression of thought, much more self-critical as to his reasoning, and so more strictly logical.

It is not suggested that all these things could be inferred from such lists of words. The particular personal experiences and the extent of vocabulary determined by width of reading are, of course, important factors. The lists are given as merely illustrating individual differences in the unhampered flow of ideas and preparing us for further study of imaginative thinking. Before doing that, however, I may mention that with young children the task of giving orally as many words as possible in three minutes has been found to be a useful test of general intelligence. Burt indeed says that 'no test so impressively displays the dullard's mental poverty and inertness'.¹

'The intelligent child shows wider fields of interest.' 'The dull child shows a lack of distinct and detailed organization among his successive ideas. On the other hand where the child is merely backward in school knowledge but sharp in natural capacity, it may come as a startling surprise to the teacher to learn, by means of such a test, what a store of general information the child possesses, what an extensive vocabulary he has, and how well his ideas are connected up.'²

¹ *The Backward Child*, p. 488.

² *Op. cit.*, pp. 490, 493-4.

General intelligence, then, is an important factor in determining performance in such continuous association tests. And this recalls what has been said above, that the eduction of relations and correlates in constructive imagination is dependent on 'g'. Also, the very process of acquiring a wide vocabulary involves general intelligence. Nevertheless, special verbal ability does enter into such performances and they are also affected by conative factors, as we shall see directly, and by emotional factors and complexes which affect responses in single word association tests given to neurotic patients.¹

Let us now return to the more precise consideration of the originality and easy flow of imaginative thought.

Experiments on imaginative processes. More precise experiments on imaginative thinking have been carried out since Binet's time. Notable among these are the experiments by H. L. Hargreaves. He used the following tests:

- (a) Unfinished pictures – the subject having to suggest completions and additions.
- (b) Writing as many words as possible in three minutes.
- (c) Ink-bLOTS – the subject writing down all the ideas suggested to him by the blot in one minute. The type of ink-blot is illustrated on p. 315.²

The originality of an idea given in any of these three tests was estimated by the rarity with which it occurred in lists given by the other subjects tested. Hargreaves discovered that there was some tendency for the child who showed originality in one of the tests to show it in the others; and that this ten-

¹ In these tests a word is read out by the psychologist and the patient is asked to give a word in response as quickly as possible. The normal time for response is about one and a half to two seconds, but in some cases a patient may take thirty seconds or more before he can produce a word. See Chapter I, p. 8.

² Use of such ink-bLOTS to detect temperamental traits and neurotic symptoms has been made by Roscharch and others so that this is often labelled the Roscharch test. We refer to their use as Temperament Tests in Chapter XXV, p. 373. The Roscharch tests proper are described. For a critical examination of the merits of the Roscharch test see P. E. Aronson's article, *B. J. of Med. Psych.*, 1947, 15. On results of experiments with ink-bLOTS see F. G. Bartlett, *Remembering*, Chapter 3, and my *Experimental Psychology*, Chapter 17.

dency could not entirely be explained by general intelligence.¹ There was, however, no unique and unitary element 'originality', the link between the three results being partly dependent on memory (and so on specific experiences, some of which



FIGURE 7
INK-BLOT TEST

might be exceptional), and possibly on a conative element, probably a lack of inhibition.

Fluency. With the above and other tests Hargreaves also estimated the fluency of ideas and associations according to the quantity and not the quality of the ideas. The scores were found to depend considerably upon 'g' and partly on a memory factor

¹ H. L. HARGREAVES, 'The "Faculty" of Imagination', *B.J.P.*, Monograph Supplement No. 10, 1927.

in the recall of ideas; but there appeared also a factor of fluency, speed, or quickness independent of these. This remaining element seemed to be a conative one, possibly due to absence of inhibition (in connexion at least with the ideas involved), perhaps an absence of self-criticism, which might lead to a preference for quantity to quality.¹ (We may recall the loosening of the tongue and removal of inhibitions produced by alcohol.) As Hargreaves says:

'In ordinary life or school work, the "noegenetic" processes (i.e., constructive through the grasp of relations and eduction of correlates) and the associative processes are inextricably intertwined, the latter being frequently more important. Where, e.g., questions of a certain degree of indefiniteness have to be answered, the fluent person is likely to reach some answer sooner than one who is not, but in so far as the response comes from associative processes it is apt to be wrong. The person gets the reputation of being "quick but inaccurate". Another person of equal "g" we will suppose but less fluent, finds that an answer does not present itself at once. He searches for it by explorations of a "noegenetic" kind, and reaches it later. When the answer is reached it is however correct and he is called "slow but accurate".'²

Burt regards Hargreaves' 'fluency factor' as nearly identical with what he (Burt) had labelled 'quickness', which, as measured by ordinary tests he held to be a mixed factor implying both high emotionality and lack of inhibition.³ Another investigator by avoiding the use of tests which correlate appreciably with 'g' (but using 'ink-bLOTS' and 'picture completions') found a fluency factor almost independent of 'g'.⁴ A more recent inquiry confirms what general observation suggests, that oral fluency is not identical with fluency in writing.⁵

¹ HARGREAVES, *op. cit.*, pp. 46 and 50.

² HARGREAVES, *op. cit.*, p. 72.

³ *British J. of the Mind*, 1923, p. 312, foot-note.

⁴ Cf. G. M. HAMMOND'S 'Essay on Fluency and Living', approved for the degree of M.A. at London University, 1936.

⁵ See C. A. ROBERTS, *B.J.P.*, 1933, 44.

Conclusions as to imagination. Summing up we may say that there is no reason for positing a separate and unitary faculty which we can label imagination. For genuine constructive thinking, the production of new ideas depends partly on general intelligence, but partly on special knowledge and on specific abilities in the department of thought concerned (as, for instance, in mechanical devices or poetic construction) and partly on emotional or conative factors which result in some persons being less inhibited and restrained in their thoughts.

Normally the flow of ideas, if it is to be useful for solving a problem, must be controlled by the main purpose at hand and by logical self-criticism. But it does so happen at times, for example, in a committee, that the effervescent, unrestrained, and rather wild talker may throw up an unusual idea that the more critical and better-instructed members may not have thought of, but which they see can be used.¹

We may agree, however, that it is convenient to retain the term 'imaginative thinking' and even 'constructive imagination' to cover the whole process (involving both 'g' and specific abilities and the special knowledge needed, and the ability to see unexpected analogies, even though this is largely or entirely dependent on 'g'), which leads to new combinations of ideas and to a new hypothesis to explain strange facts.

Can constructive imagination be trained? If this is the nature of imagination, in what sense can there be any training of it? General intelligence and special abilities (verbal and other, so far as they are innate) cannot be increased by exercise. Increase of specific knowledge in a department of thought will, however, increase the points from which new ideas may be started; and increased familiarity with the types of relationships between certain kinds of objects will facilitate further apprehension of relationships, but only within the given department of knowledge, or in others similar to it. Finding causes of chemical processes will not help a man to deduce proper causal relationships in human history.

¹ I am reminded of the fact that when I have mislaid something and kept looking in all the places where it ought to be, my wife has often found it by looking in places where I thought it could not possibly be.

So one can see again how wrong was that scientist (referred to in Chapter II) who said that science students should read poetry to increase their 'powers of imagination' for scientific work. Reading poetry will increase the vocabulary, especially of more 'poetic' words, and it will widen the range of ideas and may deepen the understanding of human nature and otherwise enrich the mind of the reader. But we have no reason to suppose it will increase the capacity to produce new ideas in quite different departments of human thought and activity.

CHAPTER XXIII

GENERAL INTELLIGENCE AND INTELLIGENCE TESTS

We have already given in Chapter III a brief account of general and special abilities, as discovered by means of tests. We saw there that there is good evidence for the existence of a large element in general ability which is innate and is not increased by exercise. This general ability is especially revealed in tests which involve the apprehension of relations and that has been further discussed in the chapter on 'Thinking and the Training of Reasoning'. Intelligence and other tests, however, are so important, and have contributed so much to the development of modern psychology, that we must devote a special chapter to them.

We do not propose to discuss in detail the technique of testing. For that, the reader should refer to special books on testing, and for reliable testing a special training is needed.¹ But we must discuss the main ideas underlying intelligence testing, and give an account of their practical uses and of the valuable results they have contributed for psychology and education.

Intelligence and general ability. General intelligence has been defined in various ways — as all-round innate intellectual ability or as the capacity for adaptation to relatively novel situations, and so on. The psychologist goes farther; he is not content with the vague popular term 'intelligence'. He first

¹ Most books which give a scale of tests give detailed instructions on procedure, e.g., BENI's *Mental and Scholastic Tests*; TRUMAN and MERRILL's *Measuring Intelligence*, and my own *Intelligence Tests for Children*. In the last I have tried to provide a series of Tests for the ages of 1;6 to 15¹ with the simplest instructions and with no apparatus which cannot be made at home or in school. With such tests a careful teacher, after a little practice, can at least form a much better estimate of the innate intelligence of a child than he can from general impression or even from examination results. But for research purposes a thorough training in testing, and in interpreting results, is necessary.

examines the processes involved in various kinds of mental work or behaviour which would be generally agreed to involve intelligence, and he finds there evidence not only of a general ability (or general abilities) but of more special abilities which enter into some kinds of mental work or intelligent behaviour, but not into others.

The existence of a general ability, as we saw in Chapter III, is evidenced by the fact that performances in all kinds of intellectual work (except the most routine kind) are correlated positively; that is, there is a general tendency for those who do well in one thing (whether Composition, Geometry, Arithmetic problems, Reasoning, or other tests) to do relatively well in others. This shows there must be some common ability (or abilities) involved in all.

Spearman, as we saw, labelled 'g' the one general ability which he claimed to find in all such intelligent activities, but he refused to call 'g' general intelligence; indeed, he identified it with mental energy. The specific ability which he maintained was involved in each special mental task, he labelled 's'. This constituted what was called Spearman's 'Two Factor' Theory.¹ Later investigations showed that things were more complicated than this simple theory implied. There is evidence that an activity – which all would agree involves intelligence – say solving arithmetic problems – may depend not only on general ability and on some specific ability peculiar to the particular kind of problem, but on a group ability entering into all kinds of work involving numbers. A 'group' ability may be regarded as a special ability involved in various tasks which have a certain resemblance (say all dealing with numbers yet are clearly distinguishable – e.g., some involving multiplication and division only, others involving ratio, and so on). Again reasoning certainly involves to a high degree the grasping of relations, which is essentially dependent on 'g'. But apart from this, all reasoning processes seem to be linked together through in-

¹ The term 'Two Factor' should not be misinterpreted. Spearman, of course, did not hold that there were two factors, but that there were two factors, of which only one entered into any particular performance in addition to 'g'.

volving some common special ability not found in non-reasoning processes. We might regard this at first as a specific reasoning ability. But Burt holds that a different 'specific ability' is involved in the apprehension of each of the various relations.¹ If he is right, then we must regard the ability common to all forms of reasoning (apart from 'g') as a 'group' ability.

We may conclude this section by saying that there is general agreement that we can provide tests, performance in which depends largely on general ability, as can be shown by appropriate statistical treatment. All would also agree that each test involves some special ability or abilities, some of which may be 'group' abilities.²

The need for varied tests of general intelligence. From the last paragraph it follows that if we want a test of general intelligence, or in other words if we want an order of merit in a group (or 'battery') of intelligence tests, to depend largely on general ability, then the individual tests in the group should not all involve the same special ability; that would give it too much influence on the whole result. So it is not well to have all the tests involving the manipulation of language or all dealing with numbers. The famous Binet tests, the first attempt to form a standardized scale of tests, included some tests which involved the repetition of words, others involved numbers, others required 'common-sense' answers to everyday questions, others involved the grasp of spatial relations, and so on. Most modern individual tests include performance tests as well as tests which depend entirely on thought expressed in language. I may illustrate by a list of the tests assigned to the age of six in my own *Intelligence Tests for Children*. They are as follow:

'(1) Observing and describing what is happening in a picture scene.

¹ See his book, *The Backward Child*, p. 525.

² I may warn the student that there is not complete agreement that 'general ability' consists of only one function. Some psychologists notably in this country the late Sir George Trevelyan and still maintain that while the statistical evidence is in full with Spearman's views, it is capable of another interpretation. But Trevelyan's own intelligence tests, justly famous as the 'Mersey House' tests, are very similar to those used by Burt and by Spearman himself as tests of general intelligence.

- '(2) Repeating five numbers after one hearing.
- '(3) Noting the differences between the drawings of two imaginary animals.
- '(4) Grasping the definition of one of the imaginary animals and detecting whether another drawing of an animal fits the definition.
- '(5) Explaining the difference between (a) milk and water, (b) wood and glass.
- '(6) Tracing the way through a printed maze, without making a wrong turning.
- '(7) Repeating a sentence of seventeen syllables.
- '(8) A test involving the grasp of analogies.
- '(9) Arranging two triangles cut in cardboard into the form of a rectangle which is provided.
- '(10) Completing a sentence such as: A boy said, "Mother, this tea is too hot so . . ."

Now it can be shown that all these tests involve general ability; but clearly the special abilities involved are not always the same. Language need not be involved at all in the triangle test, and very little in the maze and 'funny animals' test. Numbers are only involved in (2), verbal memory only in (7) and a little in (4), and so on. Hence the most important factor in determining the success in this battery of ten tests will be the general ability which is involved in all; by having varied tests we avoid the danger of the final score depending much on the possession of any one or two special abilities. In all good tests this danger is also avoided by having only test items each of which depends largely on 'g' and very little on any special ability.¹

¹ Using the Stanford revision of the Binet Tests, C. BURT and ESMÉ JONES found that, with tests for ages ten, eleven, and twelve, the influence of the general factor of intelligence was decidedly greater than that of any other factor, the comparative figures being 'general factor' 30-40 per cent.; verbal factor 15-20 per cent., age, including school knowledge, 10-15 per cent.; and no other factor more than 10 per cent. The authors refer to a coming report by Miss M. Davidson on the later Terman-Merrill Tests which reveal a greater influence of the general factor up to about 60 per cent. See C. BURT and ESMÉ JONES, 'Factorial Analysis of Terman-Binet Tests', *B.J.P.*, 1942, 12, pp. 118 and 160.

Tests should be independent of education. Entire freedom from dependence on varying degrees of education (home as well as school) is impossible to secure, but in the best tests it is managed substantially. For example, if language is involved we can try to ensure that only such simple words are used that a child, of the given age for which the test is prescribed, is sure to have learned them, unless he is considerably below average intelligence, and then the understanding of the words becomes itself a test of intelligence. If even this precaution is thought inadequate we may have recourse to non-verbal tests.

Individual and group tests. Usually the most reliable tests are individual ones – given to one child at a time. But these take a considerable time for the tester – half an hour to an hour according to the tests. On the other hand, with individual tests the tester may learn a good deal about the child's temperament and character in the course of the testing.

In group tests the material is printed and the child has only to fill in blanks or underline the right answer among several offered to him. Here are some examples from a Moray House Test.

Underline in the brackets the word which is most nearly *opposite* in meaning to the word in capital letters.

WISE . . . (clever) (course) (blind) (foolish) (clumsy)
(slow).

In the actual test the correct solutions of one or two samples are given so that the children can understand what 'opposite' means if they did not before.

Which of the following words begins with 'S', ends with 'T', and has exactly eight letters? Underline the word:

(splendid) (sentiment) (tomatoes) (separate) (transact)
(straight).

In an hour the child can deal with eight or ten items in each of a dozen or so tests. By means of such group tests thousands of children of a given age may be tested in one city at the same time. Group tests of this kind are also very easy to mark: the

right answers can be supplied by the psychologists and the marking done by clerks.

As a good group test includes so many different items and is worked by the child 'on his own', it is sometimes more reliable than an individual test with highly emotional young children and with unstable adolescents, at least until an easy and friendly relation is established between tester and child.

Standardization. If we apply a series of tests to some thousands of children at the age of, say, ten and are careful that the children are a fair sample of the population, we can then find what tests are done on the average by say 50 per cent. or 75 per cent. of the children of the age of ten and so build up a series or battery of tests which just suits the 'mental age' of ten — which is the average mental age of children ten years of age.¹ In individual tests like the Binet, a group of five or more tests is finally assigned to each age. In testing a child we always start with the tests of the age below that of the child tested, and go on till he fails in every test for a given age — so that he may actually attempt thirty or more individual tests, with considerable variety.

The need for repeating tests. No single testing should be relied on as giving a true estimate of a child's intelligence. Children have their 'off days' when they are not up to mental form — whether for physical or emotional reasons. Very young children at the Nursery or Infant School may be ill at ease with the particular tester or uninterested at the time of the tests. So the tester should take pains to get on good terms with them first, and he must be experienced in judging whether children are really trying to do the tests, and should defer the testing if they are not doing so. In any case at important stages (e.g., entry to Infant or Junior School) if tests are relied on either for grading or for suspected mental deficiency, children should be re-tested after an interval of a few weeks. As a rule, individual tests give less variable results than do group tests. If the interval

¹ The actual scores required for a given age in the particular test will, of course, vary with the test: that is found by preliminary standardization. With an individual test scale like Binet's a test is suitable for a given age when it is passed by 50 per cent. of the children of the year below that age. See BURT'S *Mental and Scholastic Tests*, 2nd edit., 1947, p. 150.

between two testings is very small we must expect a slight increase in the I.Q. owing to practice. Thus Terman and Merrill, on repeating their individual tests after an interval of two or three days (with similar tests but different items), found the I.Q. on re-testing to show an average increase of about 2 points for the ages five to sixteen, and 3 points for the ages two to four and a half.¹ This average increase would, of course, cover wider individual fluctuations. Thus the average differences given by the two parallel sets of Terman Tests was about 5 points for I.Q.s of 90-109 and about 6 for I.Q.s of 110-129.² With group tests the variations are usually greater. Probably no group test commonly used in this country is so thorough or so well standardized as are Godfrey Thomson's Moray House Tests. When a series of six of the alternative forms of this test were given fortnightly to the same seventy-six children of about eleven years it was found that the *average* range of a child's various I.Q.s in the series was 10 points, and the highest range for any child was 24. The abler children tended to vary most, and the dullest least.³ Generally, the second testing gives an increased I.Q., but with some pupils there is actually a drop.

In one centre where we applied two Moray House Tests within a fortnight of one another (and after an hour's coaching) in the second test there were increases in I.Q. as great as 25 points and decreases of 12 points.

Out of 921 boys, 220 showed an increase in the second test, but 161 showed a decrease.

We repeat, then, that even with individual tests, and still more with group tests, one testing must never be taken as final, especially when some important decision depends on it, such as selection from the Primary schools of pupils for a Grammar School or the classifying of a pupil as mentally defective. We have been referring above to a repetition of the same test, or of an alternative form of it - e.g., two forms, L and M, of the

¹ See TERMAN and MERRILL's *Measuring Intelligence*, p. 43. They built up two sets of parallel tests, Form L and Form M, of approximately equal difficulty.

² *Op. cit.*, p. 46.

³ See A. G. RODGER, *B.J.E.P.*, 6, p. 291.

Terman-Merrill Tests. Still greater differences may appear if different tests are given. So we must not assume that an I.Q. based on, say, the well-known Otis Tests, will be identical with that based on the Moray House Tests, though the most widely standardized tests do now give substantially similar results.¹

Just as there are special reasons for repeating tests with very young children (three to five or five to seven), so the emotional disturbances during adolescence make it dangerous to rely on the results of one or two testings. Young adolescents (boys of about twelve to sixteen and girls of about eleven to fifteen) should be tested once or twice a year.

The effects of practice and coaching. It is now clearly demonstrated that, on the average, there is a slight increase in scores on the repetition of a test (or a parallel form of the test) after only a short interval. But fortunately it is found that, while there is an average improvement on the first repetition or two, it is less for the third application, and thereafter the effect of mere practice is very slight.² Coaching with precisely the same form of test improves performance even more, on the average up to 10 points or more. But the maximum improvement is reached in two or three hours' coaching. Hence deliberate attempts to coach a particular child can be defeated by coaching *all*. Thus in one town in which scholarships to Grammar Schools were allocated mainly on the basis of tests we arranged for all the children to do a similar test some weeks before the main testing, and the teachers coached the children and discussed their errors.³

This tendency towards a better performance on the second testing must be borne in mind when comparing the I.Q.s of children before and after a change of environment; for example, one would expect children taken from poor homes and

¹ See H. MCRAE, *B.J.E.P.*, 12.

² See MCRAE, *op. cit.*, and D. M. MCINTOSH, 'The Effect of Practice in Intelligence Test Results', *B.J.E.P.*, 1914, 14, p. 44. Also E. A. PEEL, 'Practice Effects between three Consecutive Tests of Intelligence', *B.J.E.P.*, 22. Rather more improvement was found with practice by J. WISEMAN and

³ J. W. WRIGLEY, *B.J.P.*, 1953, 44.

⁴ On the effects of coaching see *Secondary School Selection*, edited by P. E. VERNON (1957), p. 111.

tested on removal to an institution and then tested again some weeks later to show an average increase in I.Q. - apart from any effect of change of environment.

The Constancy of the I.Q. or Mental Ratio. When we make allowances for individual fluctuations and for the effect of practice, we find that the I.Q. of a child tested at eight or nine usually remains substantially the same through his school years. This, says Burt, has been 'demonstrated by a formidable array of investigations'.¹ This is indeed what we should expect if the assumption is right that performance in good intelligence tests depends chiefly on *innate* ability, which is not increased by training, though it does mature with age.

The relative constancy of the I.Q. can be shown by re-testing the same child over a period of years or by obtaining the correlations between orders of intelligence of a group of children over a period of years.

We have to be sure, however: (a) that the early and late tests are of the same type, e.g., not one largely performance and the other purely verbal; (b) that only one testing at a time is not relied on. Some researches quoted as showing great variations in I.Q. are unreliable for these and other reasons.² When long-range comparisons are made (e.g., between I.Q.s at 7;0 and 18;0) it is impossible to be sure that the same abilities are being tested.

¹ *The Backward Child*, p. 33. Even with the original Binet Tests, many of which Burt showed depend considerably on education and training, he found relatively little average change in the mental ratio of groups of defective children from ages seven to fourteen. But there seemed a tendency for children of low mental ratio to become still lower as they got older. See *Mental and Scholastic Tests* (2nd edit., 1947), pp. 167 and 169. A progressive decline in mental ratio, Burt states, is usually 'distinctive of neuropathic and psychopathic cases' (p. 166).

See also P. L. GRAY and R. E. MARSDEN, 'The Constancy of the Intelligence Quotient', *B.J.P.*, 17, p. 20.

² See the criticisms of the Dearborn and Rothney Report in my *Normal Child and Some of His Abnormalities* (1953), pp. 241 ff. For detailed statistical points needing consideration see *Secondary School Selection*, edited by P. E. VERNON (1957), Appendix B. More reliable figures can be used by use of standard scores instead of crude I.Q.s (see our Appendix, p. 633). In one investigation the average of three tests, applied at 3½, 4, and 4½ years, gave correlations (average standard scores) of 0.70 at 14, 15, and 16 years, and even tests at 1½, 1¾, and 2 years gave 0.55 with tests at 17 and 18 years. See N. BAYLEY, *J. of Genetic Psych.*, 1949, 75, p. 181.

The important practical point for the teacher is the immediate capacity of the child and his probable capacity some three or four years ahead. In a report given me by Sir Cyril Burt of a testing, by himself, of 527 children, at between ages seven and a half and eight and a half and again four years later at about twelve, with the Stanford-Binet test, he found that 72 per cent. of the children remained in the same mental age class, 22 per cent. had changed by one class (a year of mental age) and only 6 per cent. had changed by two classes; and the Stanford-Binet tests, as Burt points out, are decidedly open to influences of training.

When does innate intelligence cease to increase? Binet and Terman held that intelligence was completely matured at fifteen; it was found that, on the average, children of fifteen did as well at the fifteen-year-old tests as did the average eighteen-year-old or adult. Clearly such a result might depend chiefly on the kind of test. It may be we have not yet found the precise tests on which persons of say twenty-five will do better than the sixteen-year-olds, even when further experience and greater knowledge do not help in the performance at the tests. More recent investigations with further refinements of tests indicate that with most people there is very little increase in general ability as estimated by intelligence tests, after fifteen or sixteen, but that it may increase very slightly up to twenty or so, and that with the ablest it may go on increasing very slightly several years beyond. In dull children it ceases to develop earlier than the average.

As we saw in the chapter on thought increasing familiarity with various types of relations, and with relations between relations, increases efficiency in dealing with them; and it is exceedingly difficult to devise, for the higher stages of intellectual development tests, which do not involve relations in which practice has been useful. In one important research children were tested over a period of twelve years; and from the curve of growth the authors conclude that after the age of twenty-one mental growth may continue up to about 2 per cent. beyond the level then reached.¹ But in a review of this work, Burt

¹ See *Predicting the Child's Development*, by W. F. Drayton and J. W. Rothney, 1941.

points out that the figures could be fitted almost as well into a different type of curve which would show a much earlier arrest of mental growth.¹

Where evidence is offered on test scores improving much after fifteen or sixteen if educational surroundings are favourable, the tests should be scrutinized carefully. Some tests include more and more unusual words, which better education or mere everyday experience may make more familiar. This applies to the famous U.S. Army Alpha Tests, which also include some questions which are primarily tests of information and not intelligence.

The tests used by T. Husen in Sweden on children of about nine and a half and then again at nineteen included word meanings and synonyms as two of the sub-tests at nineteen; so one would expect to find the senior secondary pupils (equivalent to Grammar School) gain more than those with only Primary School or Junior Secondary education.² P. E. Vernon, who refers to these results, also found a greater gain by Grammar School than by Modern School pupils, but I cannot find a reference to what tests he used.³

Finally, we must point out that some tests which seem to depend largely on 'g' at early ages cease to show any further advance in performance beyond a relatively early age, e.g., span of apprehension and recall of a series of numbers or syllables; whereas tests involving more complex processes, such as reasoning, continue to show higher scores to a much later age.⁴ It may well be that some fundamental cognitive processes mature at an early age - as do some of the sense organs; while other processes, which have appeared later in man's evolution, also mature later in the individual. On the other hand, we must bear in mind the possibility that increasing familiarity with the

¹ See *B. J.E.P.*, 13, p. 109.

² See 'The Influence of Schooling on I.Q.', *Theoria*, 1951, 17, p. 69.

³ See *Educ. Psych.*, November 1953, 1, p. 6.

⁴ The distinction between these two types of abilities is emphasized by M. B. Withey, who links the former fundamental biological abilities and the latter complex mental processes. See *Amer. J. Psychol.* *Educ.*, November 1951, 22. Another aspect of it is seen in improvement in verbal reasoning of an abstract type during the period after seventeen years. L. Brady, *Amer. Jour. of Educ. Psych.*, 1951, 31, No. 2.

grasping of complex relations, and of the relations between relations, may influence performance in reasoning tests even after 'g' has fully matured.

Do intelligence tests test innate ability? In Chapter III we pointed out that we can devise tests in which the cleverest boys in a large Grammar School will surpass the average performance of University graduates five or six years older and with five years further education. This is one type of evidence that such tests depend on innate ability rather than on education. Another type of evidence is the fact that some children from poor homes (as regards intellectual environment) greatly surpass in the tests some of the children who have enjoyed from earliest years the stimulation of an intellectual home. As Burt says, 'If the high I.Q.s obtained by the average members of the better classes are to be attributed chiefly to their environmental advantages, how can we explain the low I.Q.s of so many others in those classes, or the high I.Q.s of the poorer children?'¹

Again we have the fact that among children brought up almost from birth in the same institution and receiving the same education, we find great individual differences in intelligence. Further, there has been found almost as great a resemblance in intelligence between brothers and sisters brought up in different foster homes as between brothers and sisters brought up in the same foster homes – the correlation being 0·42 and 0·51 respectively.²

Finally, there is the evidence from the testing of twins. Correlations based on the testing of 233 pairs of twins were found by Burt to be as follow:

*Correlations with Intelligence Tests*³

Identical twins reared together	Identical twins reared apart	Non- identical twins reared together	Siblings reared together	Siblings reared apart	Unrelated children reared together
0·925	0·876	0·551	0·743	0·517	0·269

¹ See his article, 'Ability and Income', *B.J.E.P.*, 23, p. 90. I have taken several points from this useful article.

² For details see Burt's article, 'Evidence for the Concept of Intelligence', *B.J.E.P.*, 23, pp. 167, 168.

³ See Burt, *op. cit.*, p. 117.

Burt remarks that the correlation for identical twins reared apart is almost as high as that between two successive testings of the same individuals.¹

In reply to a critic who pointed out that the Americans H. H. Newman, F. N. Freeman, and K. J. Holzinger found figures less decisive for hereditary influence, Burt points out that the tests used by Newman *et al.*, were the old Stanford-Binet scale, which the users admitted was greatly influenced by schooling and home background, whereas Burt and Miss Conway used non-verbal tests of the performance type.² Burt concludes that the innate element accounts for at least 75 per cent. of the performance in good intelligence tests, and probably much more. He points out that Newman himself estimates that the amount is 80 per cent. for the Otis test. In a recent article P. E. Vernon regards as 'not unreasonable' Burt's view that performance in tests by Primary School children depends on heredity to an extent of even 80 per cent. — four times as much as on environment and training.³

We may mention that one American psychologist⁴ suggests labelling the innate element in intelligence 'Intelligence A', while 'Intelligence B' includes not only the innate element but also the capacity for thinking or intelligent behaviour which has been acquired in childhood and is commonly thought of as 'intelligence' by ordinary people. Hebb emphasizes that these are not two kinds of intelligence but two different meanings of the term. Heredity through A sets a *limit* to the development of B. Intelligence A is described by Vernon as the innate capacity for acquiring what we ordinarily mean by intelligence.⁵

We must not, however, exaggerate the partial dependence of

¹ *Op. cit.*, p. 91. It is worth noting too that the correlation between young twins (ages eight to eleven) has been found to be as high as that between older twins (ages twelve to fifteen) in spite of the longer effect of similar environment. See P. SANDIFORD, *Foundations of Educational Psychology*, p. 109. In the same chapter many other relevant investigations are summarized.

² See BURT's reply to comments by T. R. MILES and H. MADDOX, *B.J.E.P.*, 1958, **48**, p. 287.

³ See his article in *Educational Research*, 1 November 1958 (Nat. Foundation for Educ. Res.).

⁴ D. O. HURN, *The Organization of Behaviour* '1947, p. 294.

⁵ Presidential Address, *Brit. Psych. Soc. Bulletin*, May 1955, p. 8.

intelligence-tests results on home training in language. Thus one investigator tested over 2,000 children (ages eight to twelve) in Glasgow and divided the homes into five socio-economic levels.¹ Her results showed one important fact, which has been generally overlooked. As might be expected, children from the best homes or districts did better in the Reading Tests than those from poorer homes; but the superiority of the former in the Intelligence Tests was decidedly greater than their superiority in the Reading Tests — another piece of evidence against the view that children from better homes surpass those from poor homes in Intelligence Tests chiefly because of their greater facility in dealing with words, as the result of home environment.

It was, indeed, in order to give a better chance to children from poorer homes that we first introduced intelligence tests for selection for Grammar Schools in Birmingham in the early 'thirties. 'The net result of using intelligence tests in selection is that they operate much more as a class-leveller than as a class perpetuator; and it would be more logical for left-wing critics to welcome them rather than decry them.'²

Experience and the development of intelligence. We may readily agree with Piaget that later complex mental activities are built up gradually by experience in the earliest years of life, for example, the apprehension of space through the first groping of hands and the grasping of objects; and that the apprehending of simple relations (e.g., 'bigger than' in connexion with size) at first occurs only when objects are actually present. Indeed, many years ago I reported observations which show how gradual is the learning of such groping and grasping in the first year.³

At a later age (2 ; 2), not only did the space relations indicated by prepositions require the presence of the object but

¹ See G. M. FLEMING, 'Socio-economic level and test performance', *B.J.P.*, 1933, **13**, especially pp. 76 and 71.

² Quoted from *Scholarship Selection*, a British Psychological Society inquiry, edited by P. L. VERNON, 1937, p. 110.

³ See *The Psychology of Early Childhood*, 1912, especially 'the beginning of control of movement', p. 79, 4th edit., 1923, and 'Reflexes and voluntary movement' (p. 109).

they might first be learned in connexion with only one object (e.g., a box) and not apprehended in connexion with another object, e.g., the child himself.¹

The tendency for advances in language to appear in specific contexts, was also clear (see p. 412), as was the gradual apprehension of time relations; e.g., 'tomorrow' being understood and even used correctly, though 'yesterday' could not be understood (pp. 468-9).

Once a new relation has been thoroughly grasped it can later be used in apprehending another allied relation, and so more complex mental structures built up. This process Piaget calls the building up of 'schemata'.

Now undoubtedly experience is necessary for such development, but for the first few years or so such experience is common to all children whether in poor homes or good. I am glad to note that so cautious a critic as Professor P. E. Vernon recognizes this common experience in children of any one culture.²

No doubt guidance with more complex relations later will help. But experiments show that coaching in reasoning and other tests is apt to be futile if the innate ability is not there. For a complete picture we need to study the evidence on maturation and specific training to be dealt with later (Chapter XXXI, p. 493).

On this the following findings of Professor Peel through experiments on the development of drawing and of logical judgements are noteworthy:³ (1) Piaget's sequence of phases is confirmed, but not his age ranges. (2) Development was more connected with mental than with chronological age. (3) Peel concludes that neither his own experiments nor Piaget's fully answer the question - whether the development is 'the result of pure maturation' or is affected by experience and learning (p. 100).

In general, even psychologists with an appreciation of the

¹ *Op. cit.*, pp. 411, 412, 'Experiments on the Use of Prepositions'.

² See his Presidential Address to The British Psychological Society, *Bulletin of the B.P.S.*, May 1955, p. 10.

³ See his article in *B.J.P.P.*, 1959, 29.

value of Piaget's work, criticize it: (1) on the ground that it does not allow sufficiently for individual differences; and (2) because his age-levels are not shown to be based on a fair sample of the population. In some cases even, some of Piaget's fundamental theories of development are not borne out by experiment, e.g., as to the child's conception of space (K. LOVELL, *B.J.E.P.*, 1959, 29).

Ultimately for decision as to how much intelligence (as estimated by the best tests) depends on innate or environmental factors we must rely on statistical studies, of the type applied to twins mentioned above; also on the broad fact that many children from the least-favourable homes surpass in estimated intelligence many from the most favourable homes; and that children in the same family often differ from one another so much in test performances.¹

Performance tests. When a child has not had the normal training in speech – perhaps being brought up by a mentally defective mother, or because of slight deafness – some of the verbal tests of the Binet type are not fair to him, or if a child has not had normal schooling (say through illness or living on a canal barge) and so is very backward in reading, he will not do himself justice in group tests, where ability to read at least simple words, is essential.

Some psychologists thought that in any case many of the Binet type of test depended for success too much on specific verbal ability. Hence there were devised Performance Tests in which the child has to do something with his hands. It was

¹ For a summary of Piaget's views the student will find useful the article on 'Recent Developments in Piaget's Work', by D. E. BERLYNE, *B.J.E.P.*, 1957, 27. In Piaget's book *The Origin of Intelligence in the Child* (1953) are very detailed notes on some individual children, but the exposition is difficult, and only suitable for the advanced student of child psychology. Somewhat clearer but still difficult (as Vernon also asserts) is *The Psychology of Intelligence* (1950). In a long review of this (in *B.J.E.P.*, 1951, 21), Cyril Burt argues that there is nothing in Piaget's view that conflicts with the findings of factor analysis and his own earlier expounded views. He shows that some of Piaget's main conclusions were anticipated by Herbert Spencer. I may add that the view that intelligence enters into the very earliest adaptations of the infant was implied in G. F. Stout's statement made some fifty years ago, that it enters into the very first instinctive action of an animal (see *B.J.P.*, 1910, 3, pp. 238 ff.).

claimed by some that these give a fairer test of general intelligence: others thought they gave promise of testing a kind of 'practical' intelligence as useful in life as the ability tested by the Binet type of test.

The following are well-known examples of Performance Tests:

- (1) Fitting geometrical shapes into their right places in a form-board.
- (2) Fitting sections of a picture into the gaps from which they have been cut.
- (3) Tracing the shortest path out from the centre of a maze drawn on paper. (The Porteous Maze Test is one of the best performance tests.)
- (4) Arranging small cubes of wood, painted on some sides but not on others to correspond to wooden blocks, one unpainted, another painted on the sides but not top and bottom, and one painted only on the sides and top (the Cube Construction Test).

It is generally agreed that many items in the Binet type of test do depend partly on special verbal ability; and the performance tests certainly avoid, or at least greatly lessen, this influence of the verbal factor. Consequently, if an estimate as nearly as possible of general ability is wanted, it is good to include some performance or at least non-verbal tests in our series, especially where we are not certain that the children tested have thoroughly acquired the language necessary for the working of the test. Very young children from poor homes are specially liable to be handicapped in this way.¹ Also the performance tests are more interesting to most children, especially the very young. Accordingly, some recent series of individual tests of the Binet Scale type include a fair proportion of performance

¹ Using in his own school my *Intelligence Tests for Children*, Mr B. B. Wakelam found that a small group of children of four to four and a half years from 'poorer homes' were inferior to those from 'better homes' in both the Verbal and Performance Tests, but somewhat more inferior in the Verbal than in the Performance. See his article, 'A New Intelligence Test in an Infant School', *B.J.E.P.*, 1944, 14.

tests.¹ Of course, not any kind of performance test will do. Some are almost entirely tests of manual dexterity.

Correlation of Performance tests with Binet tests. The widest evidence on this point is that discussed by Godfrey Thomson.² It was based on the testing of nearly 1,000 children between the ages of nine and twelve, with the Stanford Revision of the Binet Tests and with eight performance tests. The performance tests were chosen primarily for measuring 'a certain practical ability little reached by the Binet Test with its linguistic bias'. Yet it was found that this excellent battery of performance tests correlated with the Binet results to the extent of approximately 0·7 for the boys and 0·72 for the girls.³ The main result is to emphasize the importance of a general factor which appears in both the Binet and the performance tests.⁴ But the age of the children must be borne in mind, and we must not assume that specific abilities involved in performance tests might not appear more decidedly in later years; also it should be noted that Thomson thinks that possibly a space factor involved in some of the test 'remained amalgamated with the general factor'.⁵

It should be realized that there are very different kinds of performance tests. Some are merely tests of manual dexterity involving little 'g' and depending to a considerable degree on previous practice as well as on inborn abilities; others involve more thinking about mechanisms or forms (either through visual imagery or through words) the grasp of spatial relations, and so on. The latter type of tests may depend considerably on 'g', very little or not at all on manual dexterity, but consider-

¹ The Terman-Merrill Tests (Scale I.) provide, for the ages five to fourteen, thirteen tests of a performance or at least primarily non-verbal type. In my own tests there are eighteen performance tests for the ages five to fourteen.

² *An Analysis of Performance Test Scores of a Representative Group of Scottish Children* (London, 1930).

³ *Op. cit.*, p. 27. The highest correlations were given by the Cube Construction Test, the Kohs Block Design, and the Healy Picture Completion Test II. These three combined gave nearly as high a correlation with the Binet Tests as did the whole battery of eight.

⁴ See BURT's review of THOMSON's book in *B.J.F.P.*, 10, p. 238.

⁵ *Op. cit.*, p. 45. We shall refer to the use of Performance Tests with older children in the next chapter.

ably on a higher type of mechanical ability usually called 'mechanical aptitude'. This factor (labelled 'm') may also be negligible in some tests of manual dexterity.¹

The use of tests for detecting mental deficiency or dullness, and for selection. We have already shown the practical value of intelligence tests in the Army (p. 6) and for the early detection of mental defectives (p. 5). The border-line I.Q. for mental deficiency is usually put at about seventy – as estimated by Burt's or Terman's revision of the Binet tests: Burt has suggested that children of I.Q.s between seventy and eighty-five should be classified as 'dull'.²

It is important to stress the fact that it is dangerous to trust to general impressions in deciding whether a child is a mental defective or innately dull. In some cases, of course, the fact is only too painfully obvious. But when a child's I.Q. is about the border-line the teacher may for a time be misled by the cheerful sociability which a mental defective sometimes reveals, and which gives the impression of mental alertness. On the other hand, a very quiet, morose child may be regarded as 'dull' when he is not really so.

If a child is backward in its work at school it is impossible to surmise the cause until we have first ascertained his level of intelligence. Every child then in an Infant School, who is lagging markedly behind others of his age or class, should be tested and possibly regraded. I should like to emphasize again that such a child should be retested shortly afterwards for the sake of reliability, and tested again on entering the Junior School, where indeed all entrants should be tested. The widest application of intelligence tests in this country has been in connexion with the selection of children for transference from Primary Schools to Secondary Schools.³ It has been found that

¹ See J. W. Cox's, *Manual Skill: Its Organisation and Development* (1934). A useful summary of Cox's work and of other tests of special abilities is given by R. B. GATTFELL in *A Guide to Mental Testing*, Chapter II.

² See *The Subnormal Mind* and *The Backward Child*. The official terms for 'mental defective' are now 'educationally subnormal' or 'ineducable'. See our p. 581, footnote 1).

³ A rival for the claim to the 'widest application' may be found in the use of tests in the Forces during the recent war. A valuable survey is given by P. E. VERNON in *Occupational Psychology*, April 1947, 21. The article also

two group intelligence tests can give as good a prophecy of later success in the Grammar School as can several examinations in English, Arithmetic, and other subjects. As the selection of pupils for Grammar School at 11+ is really a type of educational guidance, we shall deal with it again in Chapter XXVI.

Will the average general intelligence of the population decrease? In view of the negative correlation between the general intelligence of the children and the size of the family, both Burt and Godfrey Thomson have suggested a progressive decline in the average intelligence of the population.¹ We may add that the more successfully we select the ablest children for Grammar Schools, the greater the tendency for the ablest to join the 'middle classes' and adopt their custom of later marriages and fewer children.

A wide application of tests in Scotland in 1932 and 1942 did not confirm this prophecy, but it was thought that test sophistication in those years might vitiate the results. There are other statistical matters bearing on the problem, which cannot be discussed fully here, but the matter needs further watching.

Note on the I.Q. and percentile scores. Before closing this chapter on Intelligence and Tests, I would call the reader's attention to the fact that while the 'mental age' and 'intelligence quotient' are useful concepts for practical application in school, for more exact purposes they are being replaced by other methods, for example, the percentile score. By this we may indicate that a child is in the top 1 per cent. of children of his age in intelligence test scores or in the bottom 5 per cent., and so on. Such a measure overcomes some of the objections to the use of I.Q., especially at very different ages and with different tests. For research purposes yet another method is recommended – the standard score. See our *Appendix*, pp. 631 and 633 and references given there.

gives much useful information as to the relative value of a great variety of tests – verbal and non-verbal, performance, arithmetical, clerical, etc., with special reference to adults. A much fuller discussion is given in *Personnel Selection in The British Forces*, by P. E. VERNON and J. B. PARRY (London,

1949).

¹ See *Intelligence and Fertility* 1946, by C. BURT, and *The Trend of National Intelligence* 1947, by GODFREY THOMSON, Eugenics Society Papers 2 and 3.

CHAPTER XXIV

SPECIAL ABILITIES AND THEIR TESTING

Importance of special (or specific) abilities. In Chapter III (p. 34) we have already given a brief introduction to the study of special abilities, particularly of those which enter into a pupil's performance in some important group of school subjects or other activities, e.g., verbal, or mechanical, or arithmetical ability, various special memorizing abilities, an ability involved in dealing with space relations, and musical ability. In this chapter we shall discuss these and other special abilities and their importance more fully; but it should be understood that what we label a special ability may sometimes include two or more independent unitary functions, or may at some future time be shown to do so.

One other general point is that special abilities (apart from those involved in music and drawing) do not seem to mature so early as 'g'. At least, as we shall see directly, they have little influence on Primary school work before about 10; o except in a few individuals. Furthermore, what is taken to be a special innate ability may sometimes be largely a special interest or due partly to special experience or training.

The question of the relative influence of general and special abilities, and the time of the maturing of special abilities, is of great practical importance for the proper selection of pupils for various types of secondary education, in which special abilities become more important. In investigations on entrance examinations to Grammar Schools I found that the correlation between (a) the order in the most reliable of a group of such entrance examinations and (b) the order at the School Certificate stage, was only about 0·37. But the order of merit after one year in the Grammar School (with new subjects, French, Science, Algebra, and Geometry started) correlated with the

order at the Certificate stage by about 0·7 – a big jump.¹ I raised the question whether this change might not be due to the fact that neither the entrance examination in English and Arithmetic nor the general intelligence tests (when used) gave adequate evidence as to the specific abilities needed later in the Grammar School for foreign languages, science, and mathematics.

As already indicated in Chapter III, the more homogeneous a class is as regards general intelligence, the more important do special abilities become in deciding a pupil's relative success in a school subject, compared with that of other pupils; and in the Grammar School we find only selected pupils above the average intelligence – most with I.Q.s of at least 115.

But apart from that, if, as we have just said, special abilities tend to reveal themselves in most pupils only after ten or eleven, that would help to account for the discrepancy between the performance of the pupils in the Grammar School at the ages of twelve onwards as compared with their performance at ten or eleven.

Evidence of the later maturing of special abilities. In a wide investigation as to the abilities involved in ordinary Primary School subjects Burt found that general ability was the supreme factor determining success at 8+. Though the verbal factor was beginning to show itself, the general factor was more than seven times as influential. At 10+ the general factor was still about four times as important as the verbal, six times as important as the 'manual', and twelve times as important as the arithmetical factor.²

¹ See *The Reliability of Examinations* by C. W. VALENTINE, with the collaboration of W. G. EMMETT (University of London Press, 1932). The figure 0·7 and the 0·37 given four lines above it, relate to selected groups. Correction for selection would, however, raise both, and at present we are concerned with the big change taking place after one year.

² See BURT's article, 'The Education of the Adolescent', *B.J.E.P.*, 1943, 13, p. 132. For fuller details see his earlier article, 'The Relations of Educational Abilities', *B.J.E.P.*, 9, p. 45. Burt's 'factors' given in the above paragraphs must not be identified with unitary specific abilities. They are, as Burt points out, 'highly complex': each is a set of abilities see *The Backward Child*, p. 459. As we have already mentioned, Burt himself found that the term 'verbal ability' covered three distinguishable types of specific ability, revealed in dealing with words, viz., *a*, understanding isolated words,

At twelve there was a distinct change. The arithmetical factor had increased decidedly; yet the general factor was still twice as important as the arithmetical, two and a half times as influential as the verbal, and four and a half times as important as the manual.

Burt's findings as to the supreme importance of general ability in the early years have been recently confirmed by L. C. Kemp. He found attainments in fifty Primary Schools in the final year (? age average about ten) even in the 'Rote' subjects (e.g., mechanical arithmetic, spelling, quality of handwriting) predominantly associated with general ability. The socio-economic level of the home came next in influence, but a long way behind 'g'.¹

Further evidence as to the late development of special abilities and interests and the supreme importance of general ability is supplied by some results I gathered in examining the selection within the Grammar School of pupils who were best fitted for the study of Latin. I found that, even after one year in the Grammar School, the *general* school order gave as reliable a prophecy of good performance in Latin at the Certificate stage as did the results of the first year in Latin itself, and practically the same as the prophecy given by the results of French and English in the first year. Even brilliant capacity for Latin (as shown by classical sixth-form boys in a school famous for gaining Scholarships in Classics at Oxford and Cambridge) was indicated just as well by *general* performance as late as twelve or thirteen as it was by the results of first- and second-year Latin only. Indeed, it would have been as sound to select

(b) facility in dealing with verbal patterns, and (c) a kind of comprehension. C. BURT and ENID JOHN, 'Factorial Analysis of Terman Binet Tests', *B.J.E.P.*, 1942, 12, p. 161. Nor is the manual factor to be interpreted as corresponding to a unitary specific ability. On the contrary, we have ample evidence of a clear distinction between (a), mechanical aptitude and (b) more routine manual dexterity, and even the term 'manual dexterity' covers various more specific dexterities. (See MACRAE, *Talents and Temperament*, p. 7.)

¹ See *B.J.E.P.*, 1955, 25, p. 72. In the *B.J.E.P.*, 1954, 24, p. 81, Burt reports another inquiry on 300 boys at 9-10 and on the same boys at 13-14 giving similar results. In the same article he examines various investigations claimed to be against his views.

these boys for specialization in Latin on the basis of their early work in Science, French, and Geography as on their early Latin and English.¹

All these results concur with some obtained in the United States, which showed that first-year Latin gave not such a good prophecy, even of second-year Latin performance, as did performance in all subjects in the first year other than Latin.² Even at a somewhat higher stage it was found at Illinois University that performance in high-school Latin was not nearly such a good prophecy of first-year University Latin, as was the average high-school performance in all subjects.³

In view of all these lines of evidence, it is clear that, ideally from a purely psychological point of view, the selection of pupils for different types of secondary education should be deferred for a year or two beyond the age of eleven, if and so far as those different types of education are shown to require a high degree of certain special abilities. But here we meet with difficulties of school organization which it is not the psychologist's business to settle. All we can say is that there are psychological reasons either for deferring selection in most cases or for giving facilities for transference from one type of school to another at the age of 13+, as I suggested in *The Reliability of Examinations* and as was subsequently recommended in the Norwood Report and the Government White Paper Education Act 1944. (See our note on Comprehensive Schools, p. 357.)

Performances in school subjects as tests of special abilities. We must bear in mind that merely to give tests in, say, Arithmetic, in order to gauge the *specific* abilities involved in Arithmetic, is not satisfactory; for arithmetical work involves also general ability; indeed, excellence in solving some types of problems in Arithmetic depends very largely on general ability. To dis-

¹ C. W. VALENTINE, *Latin: Its Place and Value in Education* (University of London Press, 1937), pp. 122-7.

² See *Prognostic Tests in Modern Foreign Languages* (Canadian Committee on Modern Foreign Languages), p. 14.

³ *Op. cit.*, p. 16. The correlation of high-school Latin and Freshman Latin was 0.29, the correlation of average position in all high-school subjects and Freshman Latin, 0.51.

cover the amount of the special abilities for Arithmetic involves eliminating the influence of general ability — a mathematical procedure which the ordinary teacher can hardly be expected to undertake. For the practical purpose of classifying within the school itself, the work in the subjects themselves — Arithmetic, English, Composition, etc., and careful estimates of performance, are usually sufficient; and at the Secondary School stage they may be more valuable than more highly specific tests, because good work is so much affected by special interests which are now developing, and which, as we saw in Chapter XVI, are not perfectly correlated with abilities for the subject concerned, though in some subjects, notably Arithmetic, interest is closely related to ability. Furthermore, an interest in one subject may actually be increased by *lack* of interest in others, the pupil trying to find compensation for weakness elsewhere by specializing in his best subject.

Even the special aptitude for a subject — beyond what one would expect from the general ability of a pupil, may be a complex thing. Consider reading, for example. Suppose we disregard the important influence of 'g' and consider special verbal ability. This, as we have just pointed out, itself probably includes three distinguishable elements. The influence of special interests in types of reading matter also enters in and, of course, special facilities and encouragement (or discouragement) at home may be important influences.

Again consider *musical ability*, which may appear in very early years. In addition to general ability, this term really covers a number of specific abilities — e.g., the apprehension of relations (*a*) of pitch, (*b*) of loudness, and (*c*) of rhythm, as well as a special kind of aesthetic appreciation; all of which are largely independent of one another, as we shall see later in this chapter.

Apart from these complications we have to admit that, as Burt says, the psychology of special abilities is unfortunately still in its infancy.¹ It is true that many tests have been devised

¹ *The Backward Child*, p. 464. So I do not think that Burt would disagree with Professor L. S. Heartshaws view that the intellect needs 'further exploration' — see his article 'Exploring the Intellect', *B.J.P.*, 1951, 42, 1.

and used to test performances which seem to require special abilities. For example, as we have already seen (Chapter II, p. 13) tests in learning and remembering show that one person in a large group may be very good (compared to the others) in remembering visual impressions and relatively weak in remembering auditory impressions. Here some specific abilities must be involved. Similarly, one can find marked individual differences in, say, visual perception and auditory perception, or in span of visual apprehension and so on. The difficulty comes when we try to relate these individual differences in specific tasks to capacity for various types of school work, a difficulty we shall meet again when we discuss vocational tests for older pupils, although specific abilities are more fully developed in them.

Some special ability tests are, however, of great value in detecting causes of backwardness in specific school subjects. Just as in the case of a few pupils *high* specific abilities stand out even at the Primary School age of ten or eleven (such pupils having a high degree of the specific ability compared with their general ability, '*g*'), so in a few pupils a specially *low* degree of a specific ability compared with their '*g*' hinders them in some important subject; for example, weakness in visual (or auditory) perceptual analysis may hinder progress in reading, leading to specific backwardness probably with a spread of effects on most school subjects.

Musical ability. There is general agreement that special abilities are involved in the capacity for music and that these may reveal themselves at a very early age, witness the remarkable performance in infancy of such composers as Bach and Mozart. Some children of three or four can readily learn to sing simple tunes, while others cannot do so at ten or twelve.

have much sympathy with Hearnshaw's view that the effects of apprehension over a period of time are neglected in tests of general and special abilities. Unfortunately such tests must necessarily be restricted in time. Hearnshaw's demands can best be met by the study of individual children in detail over a period of months or years. For an experiment which does deal with 'concept development involving the time dimension' see my *Introduction to Experimental Psychology* (5th edit., 1953). It is based on the work of F. Aveling, which Hearnshaw commends. Incidentally some tests surely involve learning over a long period of time, e.g., vocabulary tests, shown to involve '*g*'.

The most important pioneer work on musical abilities was that of C. E. Seashore. Using phonograph records, he tested Pitch discrimination, Intensity discrimination, Time sense, Consonance appreciation, memory for melodies, and Rhythm sense. He compared the results with music teachers' estimates of ability, and memory for melodies showed the highest correlation; but all the tests combined only gave a correlation of about 0.4 with the teachers' estimates.¹ Recently more precise tests were devised by Dr J. Mainwaring. His results showed that musical aptitude involves several special abilities. With a group of Grammar School boys of about eleven years he found the correlation between Pitch discrimination and 'g' to be only about 0.39, and between Rhythm and 'g' about 0.37.²

With a group of children over the whole range of ages seven to fourteen Dr Mainwaring found a still lower relation between tests of rhythm and 'g' but a higher connexion between pitch discrimination and 'g'.³

Others have found a similar independence of pitch and rhythm perception, notably Dr H. D. Wing, whose experiments with nearly 4,000 children and adults also sorted tests and persons into (a) those depending mainly on harmony and (b) those depending mainly on melody. Dr Wing's tests, more elaborate than those of Seashore, correlated with teachers' estimates of musical abilities as much as 0.78 and 0.82.⁴

The great individual differences exemplified by Dr Mainwaring among children who had had similar amounts of musical training or no training at all in school, and the impossibility of attributing these to differences in 'g', also justify the conclusions as to the existence of innate special abilities involved in music.

Dr H. Wing used tests of chord analysis, and a change of

¹ C. E. SEASHORE, *The Psychology of Music* (1938).

² See his article on 'Experiments on the Analysis of Cognitive Processes involved in Musical Ability and in Musical Education', (*B.J.E.P.*, 1, p. 180). For details of the Tests, see his article, 'Tests of Musical Ability' in the same volume, p. 313. See also his later article in the *B.J.E.P.*, 17, 1947.

³ See his article in the *B.J.E.P.*, 1, p. 191.

⁴ See DR WING'S article in *B.J.P.*, 1941, 31.

pitch in one note of a chord: also of judging the better rhythmic accent in two performances of the same piece, the better harmony, intensity, or phrasing. He found these correlated to the extent of 0·82 with estimates of ability in learning to play musical instruments by thirty-four boys, ages twelve to eighteen. But the correlation of tests with general intelligence averaged only about 0·3 among boys and girls, and even less among over 450 adults.¹

Among 333 boys who had started the learning of a musical instrument he found that, of those who did well in the tests, only 2 per cent. had given up, whereas of those who did badly in the tests 40 per cent. had given up. On the other hand, he found that musical ability had little influence on beginning to learn to play a musical instrument.

Of course, all these findings of specific abilities involved in musical capacity are consistent with 'g' being still very important wherever the apprehension of more complex relations is involved, as in the phrasing and in the grouping of rhythms, in higher stages of musical appreciation, to which we shall refer again in Chapter XXIX.

Drawing. 'Of all special scholastic abilities,' writes Burt, 'that which underlies Drawing is (with the exception of music), the most easily verified.' Among boys 'the correlation between Drawing and general ability is by no means large'.² Among girls, Drawing, he finds, depends more largely on general ability. Much, of course, depends on the nature of the test. Burt used chiefly the drawing of a man without a copy: in that, the child's understanding of the relations of various parts to the whole would be an important factor. One would expect the copying of a drawing to involve less intelligence, and the drawing of a straight or curved line to be largely a matter of manual dexterity. Yet even in the 'drawing of a man' test, specific ability seems to be involved at a very early age. My little girl at 3; 5, with a mental age of about 5; 0, was decidedly below the three-year drawing standard given by Burt; and Gesell re-

¹ See 'Tests of Musical Ability and Appreciation', *B.J.P.*, Monograph No. 27, 1948.

² *Mental and Scholastic Tests*, 2nd edit., p. 353.

ports on a child of five with a mental age of seven, whose drawing was no better than that of a child of 3; 6.¹

Burt's distinction between the greater specific drawing abilities in boys than in girls fits in well with the work of Margaret Mellone, who found a 'space factor' in boys of seven years but not in girls of that age, which she interpreted as 'involving ability to manipulate given material through visualization, without any overt manipulation'.² Another investigator found that in drawing tests involving especially the organization of space, French boys surpassed girls at all ages.³

The early detection of special ability for drawing (as for music) is not an important practical problem in the schools. By the time that tests might be needed, perhaps in the selection for Technical, or, in a few cases, Art Schools, at the age of 11+, there is no doubt that the special abilities will be matured: and in any case the progress in the art work itself will usually be a better guide to capacity. We shall therefore leave further discussion of visual art until we come to Chapter XXVIII on aesthetic appreciation.

Special abilities in early childhood. We must admit the possibility that some special abilities may mature earlier than we can at present detect them. It may be that we have not yet discovered the right kind of tests or observations to make. We do know, for example, that in language development, little girls of two and three are superior on the average to boys; yet in general intelligence the two sexes seem to be about the same. If so, it would seem that some special linguistic ability is already functioning at this early age.

On my own five children I made day-to-day observations from birth, noting not only the earliest date of speaking or understanding a word, but much earlier phenomena - imitating word sounds, practising new noises, and even responsive 'cooing' to the mother. I found great and consistent individual differences in these. Thus the girl Y was the most precocious in

¹ *Infancy and Human Growth*, p. 225.

² 'A Factorial Study of Picture Tests for Young Children', *B.J.P.*, 1944, 35, Pt. 1, p. 14.

³ See R. ZAZZO, *Enfance*, 1948.

all these phenomena. The boy B was behind Y in all, but ahead of the boy A in all, and so on. Also the orders could not be explained by general intelligence as tested then and in later childhood; indeed, as soon as the language tests involved more intelligence, as in complex sentences and the use of conjunctions, B went ahead of Y, and the other children moved up. But in fluency and even verbalism, the order remained precisely the same right into maturity. Of course, these series of orders may only be coincidences. A few cases like these, as I have emphasized, can only suggest the lines for much wider investigations.¹

In an analysis of the results of Binet Tests for the ages of four and five, Burt found evidence already of a verbal factor involved in some of the tests. This might be due partly to the better training in language at home of some children; but it fits in well with the view that special verbal ability is already functioning by three years.² Burt also found a 'manual factor' in his tests of children of four and five, though that might be due partly at least to special experience. Also according to both Burt and F. J. Schonell,³ we have evidence of specific perceptual ability involved in reading, revealing itself at least by eight years; and as we have seen, Margaret Mellone has shown that a special space factor appears in tests with boys at 7 ; 0.

Ability for numbers and its development. In Chapter III we saw that a special ability was found which revealed itself in all tests in which numbers were involved. This has been shown most decisively by factor analysis; but the teacher in the Junior and even the Infant School is usually familiar with the child A, who while he is about average in the work of the class in most subjects is outstanding in early arithmetic work, while another child B, of the same average standard as A in other subjects, is far behind him or the average in Arithmetic. One wonders whether much time and effort is not wasted by trying to hurry the first steps in Arithmetic with dull children who are not ripe

¹ Details of the evidence will be found in the chapter on 'Language' in my *Psychology of Early Childhood*.

² See BURT'S *Mental and Scholastic Tests* (2nd edit., 1947), p. 137.

³ See F. J. SCHONELL, *Backwardness in the Basic Subjects* (4th edit., 1948), p. 122.

for it. Many years ago I read of a London headmaster who was convinced that much time was wasted by too early study of Arithmetic in the Elementary School. He deferred all Arithmetic except simple number work until the age of about eleven; then concentrated on it more fully than before. He declared that his pupils did as well in the examinations at thirteen as they had ever done before. They were, he maintained, not sufficiently mature before.

This case, of course, is only given as an illustration as to the possibilities and a hint as to the significance of maturation (i.e., mere internal ripening without exercise or training) which we shall discuss more fully later (Chapter XXXI). There, too, we shall find more precise evidence as to the futility of beginning formal arithmetic too early. (The student would do well now to read the section on maturation, p. 493.)

Of course, the degree of general ability is still an important factor. A bright child of seven may have a mental age of ten. But here we are concerned especially with the specific ability for number and its development and the effect of early training.

We may begin with some observations on my own children as, so far as I know, they deal with earlier stages than any other systematic studies. When the boy B was 1; 7 (mental age about 2; 0 to 2; 2) I found his nurse had begun to count to him on his fingers, and I began to try to teach him the real meaning of 'two'. At first 'two' seemed to mean for B 'the other one'. Then came the stage when it meant 'more of the same thing'.¹

Learning to count was easy, but it was clear that one, two, three, etc., were rattled off as a meaningless series: thus my use of 'two' would sometimes start him off with (thr)'ee, four, (s)ix'.

The apprehension of a group of two things as distinct from one or three, and its labelling as 'two' by the child, was not stable until 2; 4, nine months after training began. There was evidence that the mechanical learning of the counting hindered rather than helped the grasping of the meaning of two.

¹ Details of this gradual development will be found in my *Psychology of Early Childhood* (Methuen, 1942; 4th edit., 1950), pp. 469 ff.

What helped most was an interest in the objects; hence the first consistently correct uses of 'two' were spontaneous, e.g., 'two gee-gee' when meeting two beloved horses. It took another six months constant training before 'three' was understood and used as applying only to a group of three. Similar results were found with three other children.

The specific number ability showed itself in B as early as 3;3 when he had a passion for counting, whereas with Y (whose I.Q. on the Binet tests was about the same as B's) the special interest in numbers was not shown till 4;7, and with her the interval between the use of 'two' and 'three' was longer than with B, as was the interval between the use of 'three' and 'four'. B's advance now was so rapid that he could add two and one or three and one *objects seen*, and also four and one by counting. By 5;0 he was ripe for formal work, beginning with rows of dots, and soon doing simple adding sums with delight, asking me for 'hard ones' and often setting himself sums for fun.

Piaget's researches on number. Piaget's elaborate experiments began on children at a later age than mine described above, and were concerned partly with tests which show that logical processes are still much involved in the concept of number, so that general intelligence is still an important factor at 5;0 and 6;0. His experiments confirm my finding that before the required level of understanding is reached, 'counting aloud has no effect on the mechanism of numerical thought'.¹

A second important demonstration of Piaget's is the extent to which the young child remains tied to visual perception. A row of ten beads seems to the average child of 5;0 to contain more beads when spread out than when pushed down together (*op. cit.*, pp. 75-7). Yet the dawning of the number-independence of perceptual impressions seems to come when the objects are present and appearance seems to conflict with number (e.g., *op. cit.*, p. 188).

¹ See his book *The Child's Conception of Number* (1932), p. 63. This is a difficult book for the average student, but a useful survey of the main results will be found in the booklet *Some Aspects of Piaget's Work*, published by the National Froebel Foundation, 1955. It also contains a section giving practical conclusions for the teaching of arithmetic to beginners.

A third general point is that the clarifying of the concept of number runs parallel with the development of other logical procedures, such as the whole and part relationship, and that the proper use of number, and the understanding of addition and subtraction, cannot proceed ahead of such logical procedures. On the other hand, counting is a necessary part of the development. 'Elementary enumeration and addition are mutually dependent' (p. 199).

Finally the grasping of one relation, e.g., 'greater than' does not imply the grasping of its extension to three terms. A child may see that $A > B$, and then that $B > C$ without being able to infer that $A > C$. We saw this in considering Burt's discussion of the grasp of 'relations' between relations (Chapter XXI, p. 296).

Piaget does not consider general and special abilities under those terms. We know already that problem arithmetic depends more on 'g' than does mechanical arithmetic. But Piaget's work shows, I think, that these early stages of the use of numbers are really 'problems' for the child, and require to be solved before what we call 'mechanical' arithmetic can appear with tables of multiplication learned by heart, and the routine procedures of addition, subtraction, multiplication, and division practised.

So as to the readiness of the child for the first instruction in number, its general ability is our best guide. As to specific ability, that is best judged by interest and progress, with care to distinguish learning verbal responses and genuine understanding.

Both in reference to general and special abilities Piaget's reports as to ages do not allow enough for individual differences. A child with an I.Q. of, say, 140 and with corresponding special ability for number may reach the stage represented by Piaget's average seven-year-olds by the age of 5 ; 0.

General and special abilities involved in mathematics. The study of mathematical ability at later ages than eleven affords a good example both of the complexity of what many persons are apt to regard as one special ability and of the importance of general ability for success in the subject. It is of particular interest, too,

in view of the work required at present in Technical Schools, and in Grammar Schools.

At the ages of thirteen or fourteen one might expect that specific abilities would clearly reveal themselves; and different investigators have found rather differing degrees of the influence of the general ability on success in mathematics. This is not surprising in view of the different ways in which the subject is taught by different teachers. But one early inquiry suggests that even at an average age of fourteen and a quarter the most important factor in capacity for mathematics is general ability.¹

A second fairly well-established fact is that there are different special abilities involved in arithmetic, algebra, and geometry.²

A number of investigators carried the analysis farther, but I am saved from mentioning all of them by the excellent summary and criticism given by J. Wrigley, followed by a carefully planned inquiry of his own in Grammar and Technical Schools.³ This seems to confirm or establish that: (1) general ability is the most important factor for success in Mathematics; (2) the various branches (Arithmetic, Algebra, and Geometry) are further linked by a group factor; (3) performance in Arithmetic (especially Mechanical Arithmetic) and to a less extent in Algebra is partly dependent on a specific number ability; (4) performance in Geometry is partly dependent on a spatial ability; (5) specific verbal ability has little connexion with mathematical ability.

W. P. Alexander concluded that mathematical performance was markedly affected by temperament, in a group of 103 American Technical High Schools boys (ages fourteen to nineteen and a half). A factor 'X' for which he suggests the term 'persistence' or 'the will to succeed' seemed even more important than 'g'.⁴ He assumes that this factor must be of a temperament or character type because it appeared only in school

¹ See A. M. BLACKWELL's articles in *B.J.E.P.*, 10, Summary, p. 221.

² See HILDA W. OLDHAM's articles in *B.J.E.P.*, 7 and 8.

³ *B.J.E.P.*, 1958, 28, p. 61.

⁴ 'Intelligence, Concrete and Abstract,' *B.J.P.*, Monograph Supplement No. 19, 1935, p. 130.

achievements and not in capacity tests (p. 126). But can we be certain that all the *special abilities* involved in school achievements, such as mathematics, science, mechanical drawing, and shop work, were also involved in the tests? Also as we have already mentioned (in Chapter XVI) there is a tendency for Arithmetic and Mathematics to be liked (if they are liked) because of proficiency in them: and liking would tend to increase persistency.

Still, of course, no one questions the fact that persistence and conscientious work affect progress in all school subjects, whether liked or not. One investigator indeed found that, in a School Certificate examination, a character factor involving persistence and attitude to work was a more important determinant of success than any specific ability, though the general factor was still twice as important as the character factor.¹

We may presume that the effects of persistence will be seen most in work within the pupil's ability, provided he does persist: and it is interesting to note that Alexander found the influence of this factor of persistence greatest in Mechanical Drawing and greater in Science than in Mathematics.

Practical ability. There is a general idea (encouraged by some phrases in the Norwood Report) that there is a 'practical ability' shown in dealing with concrete things or the affairs of everyday life, which is different from the general intelligence tested by the ordinary intelligence tests in reasoning, the use of symbols, the grasping of wide principles and so on. Now we have already seen that a 'manual' factor has been revealed – but not so important at an early age, even in craft work, as might have been anticipated. We have also seen how closely performance tests, specially selected to test 'practical ability', correlated with the revised Binet tests (with children between nine and twelve years of age), and hence proficiency in those performance tests was proved to depend largely on general ability.

On this topic of practical ability the extensive work of W. P. Alexander must be considered.² Alexander set out to find

¹ See MARY ORMISTON, *B.J.E.P.*, 1939, 9.

² *Intelligence, Concrete and Abstract.*

whether 'performance tests measure the same as verbal tests'. He defines practical ability as: 'That ability which is measured by performance tests.'

All psychologists would agree that some abilities are involved in performance tests which are not involved in most verbal tests – and vice versa of course. The main problems are, what is the degree of influence of these special abilities and at what age do they appear, which performance tests reveal them most fully, and for what kinds of later work are these special abilities important?

Alexander claims to have established a factor F involved in work with certain performance tests. But this he does not identify with 'practical ability'. Indeed, taking even the least intelligent of the four large groups he experimented with, the 100 delinquent women (ages 16; 2 to 29; 10) with an average mental age of only 13; 5, he concluded (p. 99), 'The percentages of "g" and "F" which result in practical ability are these: Practical ability = 66 per cent. "g" and 34 per cent. "F".'

'F', then, for Alexander indicates only one element which enters into 'practical ability', and not as important even for that, as is 'g',¹ and Alexander himself protests against the idea that the 'highly practical' man will be poor in academic work: or that boys with low verbal ability will therefore be successful in practical work. P. E. Vernon and J. B. Parry, after a thorough survey of the evidence from the wide investigations in the Forces, conclude that it is extremely dubious how far such an ability (as a 'practical knack') really exists.²

When it comes to discussing the functioning of 'F' in the work of the Technical High Schools (pupils ages 14; 0 to 19; 6; average about 16; 0) Alexander's own results do not

¹ What precisely 'F' represents is another and more disputed point. E. J. J. Price thinks it is the same as the factor labelled 'K' by A. H. Koussi and appearing in either Performance Tests or in pencil and paper 'Form Relations' Tests. See his article, 'The Nature of the Practical Factor ("F")', *B.J.P.*, 1940, 30, p. 349.

² See *Personnel Selection in the British Forces* (1949), p. 244. The authors add: 'The evidence amassed by psychologists appears to show, rather that men may possess widely different degrees of ability in different jobs.'

show it to be very important. It does not appear in Science or Mathematics: for Mechanical Drawing it is much less important than 'g' and only about the same as 'verbal ability'. Even for shop work it is only about the same importance as 'g' and much less important than a character quality 'persistence' (Factor X).¹ All these results gained by Alexander have their bearing on the important problem of the special abilities needed for Technical Schools, to which we will now turn.

Tests of special abilities in the selection for Technical Schools. The present organization of schools involves the selection of pupils at about eleven years not only for Grammar but also for Technical High Schools. We have already indicated the difficulty of detecting special abilities at the age of eleven, and this applies to the Technical as well as the Grammar School. Even at thirteen years indeed the difficulty still remains. This is well illustrated by one of the most thorough investigations on the subject. Mr E. J. G. Bradford applied tests in a Junior Technical School to the pupils in their second and third terms, i.e., about thirteen and a half to fourteen and a half years of age. The tests included four individual performance tests (Cube Construction, Kohs Blocks, a modified form of the Passalong Test and Form Boards) reasoning problems, a test of reading, group verbal tests (Completion, Analogies, and Classification), four 'Spatial' tests (fitting shapes, etc.) and some Perceptual tests.²

The results of these tests were compared with the performance in the final examinations, written and practical, at the end of the school course. For our present problem perhaps Bradford's most important conclusion was that performance tests give a poor indication of success in the Technical School curriculum.³ Two of the performance tests correlated with final workshop results to the extent of 0·5 and 0·41 and with Drawing 0·42 and 0·36 (see his Table IV). But with all the

¹ See his Tables, *op. cit.*, pp. 111 and 113.

² See E. J. G. BRADFORD, 'Selection for Technical Education', *B.J.E.P.*, 16.

³ *Op. cit.*, p. 74. He suggests they are of value in disclosing temperamental qualities relevant to success in Technical Schools: but are such qualities less needed for professional people who have passed through the Grammar Schools?

science subjects, combined with mathematics, they only correlated 0·21 and 0·03, and it must be remembered that general ability is involved in these performance tests as well as special abilities. In a later research Bradford found that a *mixed* battery of tests and examinations (Kohs block, Cube Construction, Language, and Science) gave a very high correlation with Engineering, Drawing, and Workshop scores; and with the additional help of a new drawing test he claims to show that the specific abilities needed for Technical High School work can be detected in children of eleven who have a mental age of at least twelve.¹

The final criterion, of course, is success in work *after* leaving the Technical High School, and we still need more precise evidence as to the correlation between success in the Technical High School and success in later work of different kinds. To this and other wider aspects of this problem of selection we shall return in Chapter XXVI on 'Educational Guidance'.

Certainly the present position of the psychology of special abilities emphasizes the importance of not fixing the child's special type of education or the choice of a career too early, and the value of making possible a change over at thirteen or fourteen if a preliminary selection is made at eleven. It also raises the question as to what can be done by observation in the Primary School and by reports on the pupil's interests and work in various subjects and on his character qualities, and how far these can be used as guides both to the most suitable education for him and to the most suitable future occupation; though as regards character qualities the estimates are only relevant on the grounds that we ought to give the *longer* education of the Grammar School or Technical High Schools only to pupils who will take full advantage of them.²

¹ See his article in *B.J.E.P.*, 1948, 18, part of The Symposium on 'The Selection of Pupils for different types of Secondary Schools'. Other articles in the same symposium by CYRIL BURT, W. P. ALEXANDER, J. J. DISMISTER, and L. A. PRICE, 17, 18, and 19, deal with the same point.

² For a more advanced study of specific abilities the student may also be referred to P. E. VERNON'S book, *The Structure of Human Abilities*, and to CYRIL BURT'S articles on 'The Structure of the Mind', *B.J.E.P.*, 1949, 19.

To the question of estimating temperament and character we will turn to the next chapter.

Note on Comprehensive Schools. As stated above (p. 342), it is not the business of the psychologist to deal with all the problems of the organization of schools. Thus the introduction of a Comprehensive School brings serious difficulties as to size, if all types of abilities are to be catered for, and as to the supply of specialist teachers.¹

It is, however, the business of the psychologist to point out that with the best methods of selection there is bound to be a substantial marginal group of similar ability among whom some are selected and others not. On the other hand, it is also right for the psychologist to question the assumption often made that the Comprehensive School will abolish class-consciousness among the children. Careful inquiries in U.S. High Schools have shown that there are marked groups and cliques within the school based on the socio-economic levels of the homes, and markedly affecting friendships (including 'dating') and social activities.²

Even if the spread of Comprehensive Schools increases, it will be a considerable time before the selection for Grammar and Technical Schools in most areas ceases to be necessary, and within the Comprehensive Schools tests of general and special abilities will still be useful for early grading, and in the Infant and Primary Schools tests will be necessary to decide transference to special schools and helpful for early grading and the diagnosis of causes of general or specific backwardness.

¹ A useful discussion of the place of Comprehensive Schools will be found in the *Crowther Report*, 1959.

² See A. I. JERSILD, *The Psychology of Adolescence* (1957), p. 223.

CHAPTER XXV

ESTIMATING TEMPERAMENT, PERSONALITY, OR CHARACTER

The qualities of character and temperament are as important as intelligence in the process of education and in the practical affairs of everyday life; and the various means of estimating them, and even of using tests in doing so, have received increased attention of late from psychologists. Chiefly these estimates take the form of awarding marks on a scale (A, B, C, D, E) for a number of character or personality traits such as self-confidence, persistence, excitability, conscientiousness, and so on. School record cards now usually provide space for estimates of such qualities; so do the forms used by those engaged in vocational guidance; hence the whole problem of estimating personality and character traits is one of present-day practical importance.

The influence of some fundamental character or temperament traits. We may recall first several investigations about character traits which we have already mentioned:

(1) E. Webb showed that among a large group of character traits, a common factor could be traced which he identified with 'persistence of motives' or 'consistency of action' resulting from 'volition' or 'will' and so labelled 'W'.¹

(2) As we have seen, Burt regards this factor of persistence as *inversely* connected with the general factor of emotionality for which he has given evidence, i.e., the less excitable are the more persistent.²

(3) Several investigators have concluded that 'persistence' or other character qualities are as important for success in

¹ Chapter XIII of this book, p. 169.

² Not that 'W' and general emotionality are *identical*; Burt regards the latter as mainly innate, and discovered by assessments of differences in instincts; while the qualities indicated by 'W' may be largely acquired.

school studies as are general and special abilities. The findings, however, vary to some extent. Thus, Alexander concluded that persistence was a greater factor in success in the Technical School workshops than either 'g' or 'practical ability' (see our Chapter XXIV). D. W. Oates found that success in internal examinations in a Grammar School correlated more highly with the masters' estimates of 'persistence' than they did with intelligence quotients; and homework results were still more highly correlated with character qualities.¹ On the other hand, Miss Ormiston found 'g' much more important than 'persistence' for the (external) School Certificate Examination success (see Chapter XXIV).

We shall examine later the possible weaknesses in such estimates of the influence of character traits. All I want to do at present is to emphasize the importance of considering carefully the effect of such traits on scholastic (or vocational) work and of examining the methods of estimating them. First, however, we must say something of this term 'personality'.

Personality. Temperament we have already defined (Chapter V, p. 65) and also character (Chapter XIII, p. 161). Temperament refers chiefly to inborn propensities and emotional reactions; character to the organization and unification of these impulses and of acquired habits under the influence of a dominant sentiment or sentiments, or of an ideal.

'Personality' is sometimes used nowadays as roughly equivalent to temperament or to character; but we cannot do better than state the definition given by Burt and readily agreed to by the author of the most thorough study of personality produced in America, namely, G. W. Allport. That definition is, "The entire system of relatively permanent tendencies, both physical and mental, that are distinctive of a given individual, and determine his characteristic adjustments to his material and social surroundings."² It should be noted that this definition of 'Personality' would include interests even if largely acquired.

¹ See his article in *The Forum of Education* (1929), 7, etc.

² See BURT's opening article in the 'Symposium on Personality', *B.J.E.P.*, 15, p. 107. In ALLPORT's contribution to the Symposium he accepts this definition (16, p. 65).

The unity of personality. There are various reasons why estimating traits of personality, temperament, or character is a more complex, difficult, and unreliable affair than estimating general and special abilities. First, we cannot rely upon the accuracy of estimates or tests of temperament traits as much as we can on tests of abilities.

Secondly, we have to face the fact that a man's character or personality is not the mere sum of a number of entirely independent items, say persistence, courage, sympathy, good (or bad) temper, and so on. As we have already seen (in Chapter XII on the Co-ordination of Innate Tendencies and Chapter XIII on Sentiments, Character, etc.), much depends upon the relation between the various tendencies and on the dominance of a major sentiment or ideal.

Nevertheless, it will also, I think, be agreed that, even if a man's life is dominated by some master sentiment or principle (say ambition or Christian ideals) and if we may describe him as a man of 'strong character', his response to many particular situations may be very different from that of another man also dominated by the same sentiment and principles. A may be persistent in the face of difficulties, B may readily conclude he can do nothing in that line and must change his tactics; A may get angry if opposed (even if it is righteous indignation against injustice). B may be placid even if he is as much opposed to the injustice as was A and may do as much as A to help to remove it. In short, A and B may differ more in temperament than they do in character.

We may also agree that every individual is unique, and that what he is as a whole is the most important thing – his total personality; and yet we may take the view that we can often obtain a better knowledge of a whole personality, by first gathering estimates or reports on individual traits, such as cheerfulness, sociability, leadership, anger, resistance, and so on. Burt indeed has given definite evidence that a final report on a child's whole personality drawn up by a psychologist on the basis of tests and questionnaires, referring to particular traits, is much more frequently assigned by a teacher to the right child 'known to the teacher' than is a general report on

the child as a whole, made by another teacher who also knows the children.¹

The unreliability of intuition. Before we discuss the more precise methods of estimating personality or character traits, we may refer to the widespread belief in 'intuitions' in reference to character, in which incidentally, women are supposed to be superior. A Prime Minister (the late Lord Baldwin) once declared: 'I have not a profound confidence in feminine logic: but I have in feminine instinct. There is a false logic abroad to-day full of fallacies, which deceives many men, but it will never deceive women's instinct.' Women's intuitive power is sometimes regarded as a kind of compensation for an inferiority in logical reasoning. So far as this is the case, women are unlikely to regret it if we can show that this popular idea as to women's superior intuition is a myth.

This question of intuitive judgements of character is of considerable practical importance. In addition to the influence of intuition on everyday relationships with others, in all appointments where an interview is involved, in a man's selection of his doctor, lawyer, church pastor, or wife, in the selection, at least among marginal cases, of children applying for admission to Grammar Schools – in all these the selector's belief as to the reliability of his intuitive judgements is a highly important factor. In many years experience in committees selecting teachers for important posts I have been struck by the influence that the immediate impression made by the candidate on the members of the committee has upon their decision, as compared with the influence of testimonials.

Some preliminary excursions in the investigation of intuitive

¹ See BURR'S article on 'The Assessment of Personality', the first of the 'Symposium on Personality', *B. J.E.P.*, 15. The more advanced student may profitably read this symposium by C. BURR, A. MAHARLEY, G. W. ATTLEPORT, and GORDON THOMSON in 15 and 16, 1945–46. There it will be seen that in spite of Attleport's stressing of the unity of personality and the impossibility of adding up scores of estimates on individual items, Burr claims that Attleport and Gordon Thomson are substantially in agreement with himself on fundamental points. With all his stressing of the importance of unity and pattern, Attleport states that rating of traits is of fundamental value – see his book *Personality* 1933, p. 417. We shall touch on this question again later in this chapter.

judgements may be made by experiments with photographs. I submitted ten photographs of men and women to nineteen men and twenty women, asking each whether they liked the individual or not, and why. Now in one sense photographs are very unsuitable for experiments on the reliability of judgements of character; for a photograph, even if a good one, necessarily catches the individual in one mood or characteristic expression or even with an expression which is not characteristic. Consequently, I attach no importance to the fact that a photograph of a confessed murderer, included in my series, was greatly liked by a number of the women judges, who referred to his 'transparency of character', 'intellectuality', 'high moral qualities', etc. There is one way, however, in which judgements on photographs are of interest. They bring out the extraordinarily divergent judgements as to the same photograph, whether that be good or bad. For example, it may or may not be true that one well-known dramatic critic (Mr St John Ervine) is, as described by certain judges, a 'gentle, peaceful sort of chap, clever but not witty', or 'marked especially by modesty', 'rather effeminate'; but it cannot, at the same time, be true, as asserted by others judging the same photograph, that he is 'cruel and sarcastic', 'self-willed and obstinate'. Many such contradictory judgements occurred in reference to other photographs. The decisions as to whether the person photographed was liked or not do not concern us here. But I may add that, without the judges knowing it, I measured the time they took to give their decisions. On the average the women came to a decision as to liking the individual portrayed more quickly than the men (seventy-one seconds instead of ninety-one), though the range within each sex was wide. Finally, it is, of course, quite possible that the women might prove more accurate in judging, on the basis of a photo or short rapid interview, that they would like and *continue to like* a person, than the men would prove, but this we cannot know without further investigation.

Experiments on intuitive judgements of character. It is not, however, fair to estimate the validity of intuitive judgements by means of photographs: partly for the reasons already men-

tioned, and partly because any innate capacities there may be for interpreting facial expression refer primarily to the living, changing face. That there are some such innate capacities to interpret, vaguely at least, the signs of strong emotion we may agree, for mere babes will smile in response to a smiling face, and look alarmed at a scowling one. Or if intuitions about persons are thought (as they have been by some) to be due to interpretation of faces in the light of unconscious recognition of similarities to previously well-known persons, it is fair only to test this aspect by judgements on the living person.

In order to test the reliability of rapid judgements of character, made in a short interview, especially the supposed reliability of women's intuition, I carried out a series of experiments. Children were chosen as the persons to be judged; so that, in view of women's special interest in and understanding of children, this should give them the advantage, if anything. The qualities to be judged were Conscientiousness, Kindness, Obstinacy, and Straightforwardness, as well as General Intelligence. Teachers who had known the children well for several years first assessed them for these qualities, and this rating served as a standard of reference. I had the children assessed by three teachers in collaboration, so that individual idiosyncrasies would tend to be counterbalanced. Fallible as even the combined estimates of three teachers after several years' knowledge of the children must be, they undoubtedly constitute judgements much nearer to the truth than mere chance judgements. The assessment marks were as follow: Very Good (in a particular quality) + 2; Good + 1; Average 0; Weak -1; Very Weak -2.

The children were brought in small groups to our psychology laboratory. They were selected from both Elementary and Grammar Schools, the ages ranging from eleven to sixteen. The judges (seventy men and sixty-seven women) were either teachers attending an advanced course in Education or graduate students in training and with some experience in school practice, together with some members of my staff.

Each child was interviewed alone by a group of four or five judges who questioned him about his interests, what he would

like to be, etc. In the first two experiments the interviews lasted ten minutes, each judge dealing with six pupils at a sitting. In the third experiment interviews were of six minutes, in the fourth and fifth, four minutes, each judge dealing with fifteen pupils. The following were the main results gathered:¹

(1) The assessments of the judges in the first three experiments were somewhat better than would be given by mere chance, but very little better except as regards intelligence.

(2) For the last two experiments in which fifteen pupils were interviewed by each judge, for only four or five minutes, correlations were calculated and were approximately 0 for both men and women.

(3) Women proved on the average very slightly *less* reliable in their judgement than the men.

(4) Judgements which were marked as specially confident proved rather less reliable than the others.

Clearly a short interview may be of practically no value in estimating character qualities of children even by persons who are engaged in teaching children.

Judging adults by interview. Equally striking are the results of an experiment in which sixteen University graduates were interviewed by two boards of four (or five) eminent persons, including two University professors, a chief inspector, and a headmaster of a Public School. Each board interviewed each of sixteen graduates for not less than $\frac{1}{2}$ hour and not more than $\frac{3}{2}$ hour. They were to test their alertness, intelligence, and intellectual outlook with a view to deciding the value of the candidate's 'personality' for the Home Civil Service. To give a strong motive to candidates to do their best a prize of £100 was offered for the one selected.

The members of each board awarded a mark to each candidate, and then he was discussed and an average mark agreed on.

When the orders of merit for the two boards were compared it was found that the man placed first by Board A was put 13th

¹ The method of scoring and full details are given in my article in *B.J.P.*, 1929, 29.

by Board B, while the man placed 1st by Board B was 11th with Board A. If there had been six vacancies to be filled, five out of the six recommended by Board A would have been different men from those recommended by B. The correlation between the marks given by the two Boards was only 0·41. Sir Philip Hartog, who watched both boards at work, concluded that the chief reason for this disagreement was that it was largely a matter of chance according to whether they struck a topic on which the candidate was able to display his individuality.¹

Improved technique for the interview. From the two preceding sections it will be seen that the ordinary interview is a most unreliable means of estimating the personality or character of an individual, whether child or adult. But the technique of the ordinary interview can be considerably improved, as was shown in the investigation by Miss Winifred Spielman and Professor Burt.² They first obtained estimates on a group of children of such general qualities as honesty, conscientiousness, industry, etc., based on interviews by two observers. Similar estimates were made by two teachers who knew the children well. The estimates of the two observers only correlated to the extent of 0·31; the estimates of the two teachers correlated 0·54 with one another. The estimates of the observers correlated only 0·22 with those of the teachers. The authors rightly criticized the vagueness of most of the character qualities used in this first experiment and of the type usually judged. What, for example, is the prime difference between 'honesty' and 'conscientiousness' or 'conscientiousness' and 'industry'. Accordingly, they selected more elementary or primary qualities, such as submissiveness, assertiveness, sociability; corresponding to 'fundamental instincts and emotions', and so largely innate.

¹ For a full report of the experiment, see *An Examination of Examinations*, by SIR PHILIP HARTOG and L. G. RHORRY (London, 1935).

A great deal of evidence as to the unreliability of ordinary interviews of adults will be found in *Personnel Selection in the British Forces*, by P. E. VERNON and J. B. PARRY (1949), together with evidence of the better results obtained when the interviewers are specially trained in the technique of the interview.

² See a *Study in National Guidance*, Industrial Fatigue Research Board, Report No. 33 (London, 1926), p. 57.

They added a list of more complex secondary qualities of more direct 'vocational importance' which they regarded as largely acquired, e.g., self-confidence, energy, initiative, honesty, co-operation. All these qualities were precisely defined.

Thirty children of school-leaving age were now interviewed and were also given intelligence and vocational tests, and the estimates of character traits were made on the basis of tests and of interviews which were directed specifically to elicit temperamental traits. The inclusion of tests should be noted, for there is no doubt that individual tests, especially of a performance type, give some clues to temperament, as we shall see later.

In these experiments much greater *consistency* was found between the ratings of two independent observers than in the previous experiment, the average correlation being 0.60 for primary qualities and 0.55 for secondary. The *validity* of these estimates was not checked by any other criterion.¹

The distinction between the validity and the consistency of estimates. We must pause and emphasize the distinction between: (a) the validity or truth of such estimates; and (b) the consistency or agreement of two or more estimates by different people or by the same person at another time. A man may make the same estimates of a group of children today as he did a month ago; yet both may in fact be far from the truth. A supposed test of intelligence may give very similar orders of merit when applied on two occasions, yet it may be a bad test of intelligence. On the other hand, if the test is really a good one it is bound to be very consistent, and if the main estimates are substantially true and valid they will be the same at different times. Unfortunately, it has become customary for psychologists to use the word 'reliability' as meaning self-consistency; whereas most people would take it to imply valid, reliable for its purpose.

To test the *validity* of judgements on the new lists of qualities Spielman and Burt got estimates on six persons by four psychologically trained observers who knew the six intimately and by

¹ L. Wren found a correlation of 0.63 between inter-rater estimates in reports by teacher - a higher correlation, 0.75, was found by Wren. See his 'Character and Intelligence', *B.J.P.*, Monograph Supplement, No. 3.

each person of himself. They were then interviewed by one not intimately acquainted with them. The correlation between (a) the interviewer and (b) the average of the estimates of the four acquaintances and of each man's estimate of himself proved to be 0·58 for primary qualities and 0·46 for secondary.

It will be seen that by carefully selecting your interviewer, and by using a list of qualities based on psychological analysis, estimates based on an interview can be more valid than is usual, though even the correlation of 0·58 leaves room for many errors.

In a later investigation on children (ages twelve to fourteen), and with much larger numbers (183), Burt found a lower average correlation of 0·44 between interview assessments and the criterion based on reports from school teachers, parents, and home visitors. The items assessed included general emotionality, cheerfulness, sociability, leadership, and industry – the last giving the surprisingly low correlation of 0·28.¹

The reliability (or agreement) of teachers' estimates of character. This is of special importance because of the present-day tendencies to attach more weight to the recommendations of teachers in the selection of pupils for Grammar or Technical High Schools and in vocational guidance. The Government White Paper on the Education Act indeed seemed to suggest that in reference to intellectual ability, attainments, and character, teachers' assessments should be relied on more than tests and examinations.

We have already seen that in one inquiry the estimates of two teachers as to such qualities as conscientiousness, industry, and honesty, correlated only to the extent of 0·54. In the inquiry by D. W. Oates already referred to (p. 359), estimates on character traits were made on 297 boys in a Grammar School, by masters who had known them intimately from the date of their admission to school – periods ranging from one to five years.² There were two independent ratings. The qualities

¹ See BURT's article in the 'Symposium on Personality. I. The Assessment of Personality', *B.J.P.*, 1935, 15, p. 115.

² See D. W. OATES, 'The Relation of Temperament and Intelligence to Scholastic Ability', *Forum of Education*, 1929, 7, p. 176.

rated were 'Persistence', 'Control of Attention', 'Drive', and 'Speed' – e.g., in coming to a decision or in accomplishing various school tasks. Fourteen masters took part in the experiment.

The resemblance between the pairs of judges about the same boys is indicated by the following average correlations (approximate):

Persistence	Control of attention	Drive	Speed
0·6	0·47	0·45	0·51

The average of these correlations is 0·5, practically the same as that first mentioned, obtained by Spielman and Burt.

In another inquiry as to the consistency of teacher's estimates Burt found a higher correlation – of 0·89 as to Industry and 0·72 as to Emotional Stability, but only 0·42 as to Neurotic Tendencies.¹

The danger of 'halo' effects. Estimates of various character qualities are especially liable to suffer from what is called the 'halo' effect – the unconscious tendency to mark a pupil high (or low) for all qualities because he has impressed the teacher markedly in respect to one. Thus, the boy who is exceedingly attentive to a teacher, or very good in his subject, is apt to be given high marks for industry in general as well as for intelligence. To combat this, reports as to character traits should refer as much as possible to specific *facts* about behaviour.

Also the whole class of pupils should be marked first for one quality and then all marked for a second quality, without the teacher seeing what he has given before. Even this procedure cannot get rid of the danger of 'halo' effect, but it is lessened to some extent by getting independent estimates from several teachers, and by a special warning of the dangers of halo effects and by including estimates from 'house' or 'games' masters who see the pupils in out-of-class activities.

General and specific traits in temperament, personality, or character.

¹ See his article on 'The Reliability of Teachers' Assessments of their Pupils', *B.J.U.P.*, 15, especially Table I, p. 1. In assessing intelligence teachers were less consistent than were the intelligence tests used, much less consistent as to special aptitudes than were tests, and about as consistent in assessing attainments as were tests of attainment.

In reports on personality or character we may adopt two different types of names for qualities or traits:

(a) We may take a few broad popular terms, e.g., honesty, industry, self-respect.

(b) We may use a series of terms based on primary and fundamental innate tendencies such as assertiveness, anger, tenderness, sex, and so on.

The broader qualities (*a*) are more readily understood by the general public and by most teachers; and for practical purposes of school reports we may have to be content with these if only because of lack of time for much detail. Furthermore, they often covered acquired character traits which are important in considering the immediate educational future of the child. But estimates of the second type (*b*) prove more reliable, as we have seen. For purposes of research at least, and for critical 'problem' cases, we need to be more specific than is often the case in reports on temperament; and with problem children especially we want to know the strength of innate tendencies, and to distinguish them from acquired habits.¹

For example, in discussing 'gregariousness' and 'sociability' we have already seen that the term 'sociability' is very vague, and that some people may love to be with a crowd, others like to be with small groups of friends, and yet others may dislike solitude and be so keen on being with one friend at a time that they could hardly be labelled unsociable. Personally, I should find it difficult to know whether to classify myself as 'sociable' or not. A large number of people make me feel indifferent as to social intercourse with them. On the other hand, there are a good many people whose presence I always enjoy. There are a few indeed whom I should enjoy having almost always with me. Is one in marking for 'sociability' to balance great desire for the society of a few against a relatively mild liking for the society of a considerable number?

For the purpose of school records to be made by the teacher, broad classifications may be convenient. Indeed, in one inquiry

¹ See my article, 'The Specific Nature of Temperament Traits and a Suggested Report Form', *B.J.E.P.*, 1940, 10.

the original length of the report form was deliberately reduced by combining under one heading items that had a good deal in common – e.g., ‘social interests’, though the authors emphasize that they do not suggest that the qualities listed are distinct ‘psychological entities’ or ‘faculties’.¹

This method, however, though a time-saver for the teacher, inevitably loses in exactitude, and for research and even at times for practical purposes, has its disadvantages. Consider, for example, the term *Reliability*, used in one report. This form is interpreted as follows: ‘Is he truthful, does he lie or romance? Can he be relied upon to take care of things and behave in the same way when the teacher is not present as when she is watching him? Will he torment the younger child if no grown-up is near?’ But are not the three items included above under ‘reliability’ largely independent? How would one mark on the five-point scale a boy (*a*) who has never been known by the teacher to lie, and (*b*) who does not torment younger children, but (*c*) often gets into mischief when the teacher is out of the room – surely a not uncommon type?

Again, consider the general term ‘aggressiveness’ or ‘pugnacity’. It makes a great difference to our judgement of this according to whether it is directed against the weak and helpless or against the strong and tyrannical; and it is possible that in a boy of 8; 0 or 10; 0 (*a*) teasing or hitting younger boys may be a sign of the future bully or tyrant, (*b*) occasional fighting of those of his own age may be of no special significance, while (*c*) the attacking of older bullies, like:

‘Some village-Hampden, that with dauntless breast,
The little tyrant of his fields withstood’

may be the sign of later courage of a nobler type.

Of course, the notes on individual points must be taken into conjunction with others which may interpret them. I have before me, for example, a report on one boy, age 8; 6, who was very pugnacious with children of his own age and older (*‘aggressiveness’* being marked A in the five-point scale), yet to

¹ See *The Educational Guidance of the School Child*, by H. R. HAMBLEY, R. A. C. OLIVER, H. E. FIELD, and SUSAN ISAACS.

smaller children he 'offers help'; and 'helpful sympathy' with younger children in difficulties is marked B. This boy was regarded as a real problem by the teachers; the helping of younger children may prove a redeeming feature, but it is modified by the report that he announces to other children the names of those whom he has been helping, and that he constantly seeks to attract the attention of children around him. This affords a good example of the need to consider finally the reports on all the various traits together.

The distinction between occasional outbursts of temper and more prolonged sulkiness may also prove important, and almost certainly if either grows to excess it needs a specific form of treatment. Sulkiness should also be distinguished from general irritability, which is probably caused in many cases at least partially by some abnormal bodily conditions.

As to *obedience*, it is a matter of common knowledge that a child may be obedient to one person and yet be quite uncontrollable by another: and the former person (or latter) may be a nurse and the other a parent; or the child's attitude to one parent (or teacher) may be very different from the child's attitude to the other parent (or teacher). No doubt some children are generally disobedient and others generally submissive to all adults and older children at least; but a group (probably, I think, the great majority, but how large at present is unknown) are reasonably submissive to some and defiant or at least resistant to others.

Consider also the terms *initiative* and *leadership*. There may be leadership of a dominating and even aggressive type. On the other hand, there may be leadership which is due chiefly to the leader having original ideas, and being able to show how they can be carried out. Initiative may also show in purely personal activities, which have no relation to other children.

The method of psychological study of personality. In the last section we have become even more analytical than before: so a final word may be said on the general method of the study of personality. The aims of a science are to establish general laws governing the particular objects the science is specially concerned with, and to classify objects according to their particular

qualities. If the psychologist of personality deals with individual persons who are said to be unique, how can it be scientific? The answer is that the psychologist begins with the study of individuals, finds traits which those individuals all possess, though in varying degrees, and then tries to assess these degrees and their frequency in people; then he returns to study the individual again in the light of these wider studies. He may label a child as having an unusually high degree of assertiveness, or of self-confidence, or as in the bottom 10 per cent. of all children of the age in respect to 'persistence in the face of difficulties in mental work'.

If it be argued (as G. W. Allport does)¹ that the psychologist is concerned with the peculiar *pattern* of the individual, the relative strength of different traits or interests and tendencies and the resulting 'personal key-qualities', I should agree. But in studying the individual we can only be guided by traits which have been first isolated by comparative studies of many persons.

In any case, suppose an applicant for domestic service was marked as follows on a five-point scale, by a mistress who had known her a few years: Honesty, A; Personal cleanliness, A; Conscientiousness, A; Tidiness in the house, A; Personal appearance, B; Good temper, A; would Professor Allport hesitate to engage her until he had a general report on the 'whole personality'?

Tests of temperament, personality, or character. It must be admitted that at present, actual tests of temperamental traits are hardly beyond an experimental stage. We have, however, already said that in applying individual intelligence tests one can often form some impression as to temperament. The Porteus Maze test, for example, may indicate impulsiveness or cautious self-restraint. Indeed, the performance type of test is more likely than the verbal to reveal temperament traits. I may quote the findings of Miss Spielman and Professor Burt after their application of performance tests.²

¹ See his article on 'Personality' in *B.J.E.P.*, 16, p. 67.

² See *A Study in Vocational Guidance* Industrial Fatigue Research Board. Report No. 33, 1926), p. 69.

'(1) The child's general speed of movement was nearly always suggestive; it seemed possible to infer whether in the ordinary situations of industrial life he would be quick or slow, calm or excited, impulsive or deliberate, likely to do his best when left to himself or needing a little external pressure to bring out his maximum efficiency.

'(2) Equally instructive was the effect of success and failure. One child would be almost indifferent whether he accomplished the test or not; another would become worried or even exasperated by the smallest difficulty; and a third would be so anxious and so over-scrupulous to avoid any mistake, that he bungled all but the most habitual and mechanical reactions. There was, too, a marked difference between the children who would persevere in spite of partial failure, and those who were inclined to give up at every obstacle, even in tasks appealing to their deepest interests.

'(3) A third point that could be noted was the presence or absence of self-criticism: the self-complacent child would be satisfied with any result however poor; the over-confident child would take up the hardest problem with the same eagerness as the easiest; the diffident child would search again and again for possible errors when in point of fact his work was complete and irreproachable.'

We shall see in a later chapter that such inferences from tests may be of some use at the later adolescent stage in the work of vocational guidance.

As regards more specific tests of temperament or personality, these have so far proved more useful in examining abnormal individuals, including problem children and young delinquents. A wide variety of tests have been used, and as with general intelligence tests, variety is needed if we are to eliminate or reduce the influence of irrelevant factors. We have already described (p. 314) the ink-blot test, and suggested its value, especially in the modern form known as the Rorschach Test. But claims as to the high validity of this, or any other single test, should be received with caution.¹ Other tests are as follow:

¹ On 'The Rorschach Test', see P. E. VERNON, *B.J.M.P.*, 1935, 15; M. KERR, 'The Rorschach Test applied to Children', *B.J.P.*, 1934; and

(1) The interpretation of pictures, or the making up of a story to fit a given picture. This test in its modern form is labelled the 'Thematic Apperception Test'.

(2) Free association tests, similar to the one we have described already (p. 312).

(3) Completing a story — somewhat similar to the completion of sentences which we described in the chapter on Imagination, but here with our eyes open for ideas which suggest emotional disturbance, frustration, and so on.

(4) Essays written on such subjects as 'What I should like to do when I grow up' or 'The story of my life'.

(5) Questionnaires, in which among some commonplace questions others are inserted which may reveal special traits or desires. These questionnaires take very varied forms; some approach more to tests of moral judgement than of underlying temperament. As with essays, the weakness of questionnaires is that the person may try to say what he thinks is expected of him, or even to deceive if he gets an inkling of the purpose.¹

(6) Tests like school examinations in which there are opportunities of cheating which can be detected.²

(7) Observation of children at specifically arranged forms of play, e.g., with dolls or puppets, or with plasticine. These have been especially used in child-guidance clinics. Their value (which we may admit) has probably been over-estimated, because so often a child is already known to be reported for certain types of misconduct, and then it is so easy to imagine a connexion between that and the type of play.

AMYA SEN, 'A Study of The Rorschach Test', *B.J.E.P.*, 1949, 19, p. 142. The last reports a correlation of 0.6 between 'General Emotionality' as indicated by Rorschach Tests and 16 as judged by persons who knew the subjects 100 students intimately. The correlation for 'Cheerfulness' was 0.52, and for 'Self-assertion', 0.43. On the use of Rorschach Tests in the Forces, see P. E. VERNON and J. B. PERRY, *Personnel Selection in the British Forces* (1949), especially p. 236.

¹ As to several of the above tests, reference should be made to PROF. P. E. VERNON'S Report, *The Assessment of Personal Quality Test Methods* (Medical Research Council Report, 1948).

² Some of these tests of 'honesty', and various other tests of character, are described, at first, given, by VERNON TESTS in Chapter 13 of the *Manual of Child Psychology*, edited by L. CARNAP and (1947). I have discussed them in my book *The Normal Child* (Pelican Books, 1949), pp. 107-9.

(8) Observation of children under arranged conditions, e.g., at a party or a picnic, when co-operation is called for.

In this last we get nearer to the conditions of everyday life, and tests shade off into the method of observation which can be employed by teachers or parents if they have the adequate training for it and can achieve detachment and impartiality. Indeed, the reports of teachers who have had opportunities of observing pupils in playground and camp as well as in school have often been used as the criterion of the validity of such tests as we have mentioned. And inevitably so, as we can hardly hope to find a better, except from the few psychologically trained parents who can maintain an impartial attitude, and that is very difficult except where personality differences are relatively unimportant.

In his inquiry (already referred to in this chapter, p. 367), Burt, using as a criterion the reports of teachers, parents, and home visitors, found the following average correlations for such traits as General Emotionality, Stability, Sociability, Leadership and Industry, Neurotic and Delinquent tendencies; for comparison other correlations are given.

Average correlation for all traits found with

Interviews	Tests	Standard Situations.		
		(a) Actual	(b) Play	Combined
0.44	0.27	0.54	0.33	0.63

It will be seen that the tests were the least valid, and the 'actual situations' the most valid.¹

A more recent and thorough examination of *Personality Tests and Assessments* in a book with that title is given by Professor P. E. Vernon.² Substantially his findings confirm the earlier inquiries. The most 'pervasive' quality he names 'dependability', which seems to correspond to Burt's 'stability'. He is very sceptical about the value of 'objective' tests.

¹ *Op. cit.*, p. 115. See also the results found by M. A. CUNNINGHAM with 'standard' play-situations, and their correlations with teachers' estimates, reported in the outline of his M.A. thesis, *B.J.E.P.*, 1948, 18, p. 164.

² Methuen, 1953.

At present we may conclude that while some tests of personality may be helpful to the psychologist as a supplement to reports, or as a starting point for interviews, we cannot yet dispense with reports by observers who know the everyday behaviour of the individual in varied circumstances, fallible even as we have seen such observers themselves to be. For purposes of future research as to the development of personality in childhood, we may look for useful evidence from records kept by specially trained persons about infants who are brought up in an institution, or about children in boarding schools.

Attitude tests. This may be the best place to give some account of attitude tests, though they have a greater connexion with interests than with temperament. But some psychologists (especially American) at times use this term 'attitude' when we should use 'sentiment', as we have already pointed out (Chapter XIII, p. 156), and of course, sentiments, as we have contended, are the main constituents of a mature character. Where the tests are concerned with attitudes to more or less important values (such as honesty or truth), or to fundamental traits or impulses (such as assertiveness versus submission), they may throw light on the personality. For example, 'Do you feel self-conscious in the presence of superiors? . . . Markedly . . . Somewhat. . . . Not at all. . . .' ¹ Where the questions in the attitude test refer, say, to reading, or the radio, they become rather tests of interest or even sometimes of abilities, or of knowledge as a supposed indicator of interests.²

The typical attitude test includes a large number of very varied statements about some particular subject, and the person is asked to indicate those with which he agrees or disagrees. Judges supposed to be competent decide which statements indicate a certain attitude to the subject. As an example I give a sample of a test on 'Attitudes to Religion'.³ Persons were asked to write 'yes' or 'no' against each statement, or to

¹ Taken from G. W. ALLPORT's *Personality*, p. 413.

² For a description of some attitude tests, see R. B. CATTELL, *A Guide to Mental Testing* (2nd edit., 1948), Chapter IV.

³ By F. E. MORETON, *B.J.E.P.*, 1944, 14, p. 69.

put a dash against it if they could neither agree nor disagree. Forty items were given including

- (1) Religion makes people live better lives.
- (2) Religious parents make unhappy homes.
- (3) Without religion human life is aimless and pointless.
- (4) Religion has been put into man's soul by God.
- (5) All religions are superstition.
- (6) Religion makes people more tolerant.
- (7) Religion is a great enemy to scientific truth.
- (8) True prayer is always answered.
- (9) Infant baptism is a help to the child only through its effects on the parents.
- (10) Prayer is harmless but useless.

I think this test is as good as most attitude tests, but the possible weaknesses and complications will be seen from the above sample. Also it is clear that some 'attitude' tests will depend greatly for their validity on the intelligence and artfulness of the testee. When, however, they are in the form of interest tests, they may be useful in vocational guidance, and as supplementary aids in the selection of pupils for various types of secondary education.

CHAPTER XXVI

EDUCATIONAL GUIDANCE, SCHOOL RECORDS, AND ATTAINMENTS TESTS

The vocational importance of selection for secondary schools. We shall deal with vocational guidance in the next chapter; but even before specific vocational education has begun in the school, we cannot quite separate educational and vocational guidance. The selection of pupils for Grammar Schools at eleven has indeed been a great process of vocational guidance, though that has not been fully recognized; for the professions and black-coated occupations were largely recruited from the Grammar Schools, while the great majority of those remaining in the Senior Elementary Schools went, at fourteen years, into manual work or the lower commercial or distributing occupations. With the raising of the school-leaving age this marked distinction was somewhat lessened, though special selection at 11+ for Technical High Schools will accentuate the critical nature of the selection for some pupils. The difficulty of selecting at ten or eleven the pupils with the special abilities needed for technical work has already been discussed in Chapter XXIV. But apart from any special abilities (and interests) needed for Grammar School work and any other special abilities needed for the Technical High School, so far as the selection at eleven continues to be an attempt to choose pupils with greater *general* ability for Grammar and Technical High Schools, the importance of this selection will continue to be great, and we must examine the methods which have been, and indeed still largely are, in vogue.

Selection by examination at 11+. Until the recent Education Act prescribing Secondary Education for all up to the age of fifteen, only about 10-15 per cent. of all children were trans-

ferred to Grammar Schools.¹ This was formerly done on the basis of a public examination in English and Arithmetic, and sometimes other subjects.

These examinations proved to be most unreliable as a means of selecting all the ablest pupils. The very best children were no doubt passed on to the Grammar School; but near the margin of success or failure the results were most uncertain, especially in some centres. With a view to testing the soundness of the selection by examination, I made (in 1930-32) a series of follow-up studies in about a dozen centres in different parts of the country, comparing positions in the entrance examination with positions at the end of four or five years in the Grammar School. In some centres I found that there was practically no resemblance between the order of merit at entrance and that at the School Certificate stage. In other words, boys who had been near the top in the entrance examination and had gained the best scholarships were near the bottom at the end of their four or five years; while some who only just scraped through the examination at 11+ without gaining maintenance grants or even free places proved to be the best in the work of the Grammar Schools. Some instances indeed were extraordinary. One boy who had been bottom in the entrance examination was top of the school after four years. One girl who just failed to obtain a place on the written examination gave a favourable impression at the interview and, by special effort, one more place was found for her in the school. She proved to be a brilliant scholar gaining five distinctions in the School Certificate Examination, a score for once, for the interview.²

In a few of the examinations better results were gained and the best examinations of all included the use of intelligence

¹ The percentage varied greatly in different areas. The figure given above is a rough average. See 'The Spens Report' (*Secondary Education*), 1938, p. 93.

² Details of this inquiry with the follow-up studies are given in *The Reliability of Examinations*, by C. W. VALENTINE, with the collaboration of W. G. EMMETT (University of London Press, 1932). In that book the word 'reliability' is used in the popular sense. In the technical sense, as used now by psychologists, it would be 'validity', the term 'reliability' being used in the sense of 'consistency' -- the extent to which an examination or test gives the same results when the same or a very similar examination paper or test is repeated shortly afterwards.

tests. But even so, the evidence suggested that about one-third of the pupils accepted on this examination should have been replaced by the best pupils among those who were failed, and a considerable proportion of the children admitted had bad reports subsequently from the heads of Secondary Schools.¹

I found big changes in order of merit at the end of the first year in the Grammar School, after which the orders were much more steady; and I recommended facilities for transfer after the first year from the Grammar Schools back to the Senior Schools, and vice versa.

Tests versus examinations. In more recent years group intelligence tests have been added to the entrance examinations in Arithmetic and English in many more examination centres; and it has been found that the intelligence tests alone may give as high a correlation with later performance in the Grammar Schools, as do the combined examinations in English and Arithmetic.

The keen competition for Grammar School places led to the examination having a bad influence on school work. In many Primary Schools it was felt to be a test of the school's efficiency, and pupils were specially coached for it at the tender age of nine or ten. A leading official of one of the Teachers' Unions assured me that heads dare not discourage this special coaching lest their schools should be criticized by higher authorities for poor results in the examination. Reports of teachers and former students convinced me that the shadow of this all-important examination is even cast over the work of many Infant Schools, and still more over the Junior Schools, though I was sceptical about this at first, because in over twenty years as a member of the Education Committee in Birmingham, I had never heard the examination referred to, at least in committee, as a test of the efficiency of the Primary School.

The report of the Board of Education on *Homework* (1937) stated that in many parts of the country, homework is set in the

¹ In most of the centres my research dealt with, the correlations between the order of merit in the entrance examination and the order in the School Certificate Examination or the school's own examination or both combined four or five years later, averaged only about 0·1. In the best centre the average correlation was about 0·4. *op. cit.*, Appendix I.

Junior and sometimes in the Infant Schools especially for the special place examinations, and that sometimes children feel the strain severely. 'They look as if they were carrying all the cares of the world on their shoulders and look like old men and women. The parents had made them feel the tremendous importance of the examination' (p. 17). From Wales came the report of a 'marked rise in nervous and physical disorders in April and May, attributed by the Medical Officer to anxiety over the examination'.

The use of school reports. All these results of investigations showing the unreliability (or invalidity) of the entrance examinations for Secondary Schools, and the reports as to its harmful influence, led to the view expressed in the Norwood Report that these general examinations should be dropped and that selection and allocation for different types of Secondary Schools (Grammar, Technical, or Modern) should be based on school records and the reports of Heads of Primary Schools possibly supplemented by intelligence tests.¹

We shall discuss the use of school records more fully later in this chapter, but I may say here that the chief difficulty about their use in selection for Secondary Schools is that different Headmasters and Headmistresses are likely to have different standards, especially in judging character qualities; and the difference between the abilities of pupils in one school and those in another school in a different district would also complicate things. It was for these reasons that I suggested a *Quota* scheme described in the pamphlet referred to below, which has already been applied with success in one or two districts.² The plan was as follows:

A suggested scheme for selection. A general intelligence test under the supervision of an independent expert is applied to all the children of the selected age in all the Primary Schools of a

¹ See the Report entitled *Curriculum and Examinations in Secondary Schools* (London, 1941), p. 17. The Report is generally known as the 'Norwood Report'.

² This quota scheme was first described in a pamphlet *Examinations and the Examinee* (The Birmingham Printers, 1938). It was recommended, with some elaborations, in the Report of the Consultative Committee of the N.U.T. entitled *Transfer from Primary to Secondary Schools* (1949).

town on the same day. A second series of tests would be given after an interval of a week or two. These tests should be preceded by practice and deliberate coaching in several similar tests of all the pupils of the given age in all Junior Schools a week or two before the first test proper. This will practically eliminate any advantage due to any individual coaching. We are concerned first with finding the number of very intelligent boys in each school. If, then, we know the number of places available in the Grammar Schools in a particular town it is a simple matter to find the lowest I.Q. which would just provide the right number of pupils. Taking this as our basis, school A, in which, say, eight boys are found with that I.Q. or higher, might be apportioned eight places, as its *quota*, while school B has four and school C, only two.

'But, surely,' the critic will say, 'we cannot select merely by intelligence tests.' Agreed; and here comes in the value of the school reports. If the order of merit based on school reports of the best twenty or so in school A among the eleven-year-olds be drawn up by Headmaster A in collaboration with his staff, and also the order of merit of the best twenty in the intelligence tests, these orders can be combined, and the average obtained. If the L.E.A. so decide, extra weight may be given either to the test order or to the Head's order. If desired, internal examinations in English and Arithmetic might also be made *within each school* and set by the teachers on the work of the year, to help to determine the best twenty in the school. Finally, the top eight of these twenty can be awarded the eight places in the Grammar Schools which have been allotted to school A; and so with schools B, C, etc.

The great advantages of such a scheme are: (1) that the Primary Schools are not competing against one another in their work; and (2) that school records and reports can have a great individual influence in selection, *within each school*, without the supreme difficulty of comparing the reports of one school with those of another.¹

¹ It is sometimes suggested that reports from the various schools can be standardized by reference to a common examination. But that involves the objections already raised against a common competitive examination for

The scheme has already been tried in one centre and proved very satisfactory to the authorities and heads of schools concerned, but it is not suitable for rural areas with many small schools.¹

Selection for Technical High School versus Grammar School. As the Technical High Schools develop it would be possible to use the above scheme with additions. First, the level of general intelligence demanded for (a) the Grammar Schools or (b) the Technical High School could be determined having regard to the number of places available. Then performance or other tests of the special abilities thought desirable for the Technical High School, and any specific tests of linguistic or other abilities found desirable in the Grammar School, could be applied to those whose general intelligence appears adequate. Each Primary School's own report on special interests and aptitudes would also be sent in. On the basis of all these, pupils showing a decided bias towards the technical side or to the Grammar School could be directed accordingly (or advice given to the parents): those who had adequate special abilities for either type of school could be given a free choice and so on.

At present, as we saw in Chapter XXIV, we seem hardly able to select with confidence by special tests at eleven years boys more suited for Technical High School work rather than

all the schools. Furthermore, examinations do not involve all the qualities which it is desirable to include in a school report. It is not surprising that in a wide Scottish inquiry it was concluded that teachers' estimates even on attainments could not be standardized satisfactorily on the basis of Intelligence Tests. (See W. McCLELLAND, *Selection for Secondary Education* (1945), p. 45.)

¹ The plan is discussed with some further elaborations under the title *Quota Scheme* in The Report of the Research Committee of the National Union of Teachers (1949). Before that an account of my suggested scheme in action was given in an article by MR V. J. MOORE, Director of Education for Walsall, in the *B.J.E.P.*, Feb., 1948, 18. After the scheme had been first tried at Walsall in 1941 the heads of Grammar and Primary Schools voted in favour of its continuing, as it has done up to the present. It is worth adding that in the examination for 1947, for the 388 places in selective Secondary Schools only nine boys and twelve girls who by their intelligence test scores won allocations for their schools were not themselves among those finally assigned to the selective Secondary Schools. At Walsall the following weighting was used: Intelligence Tests 3, Internal Examination 1, School Report 1.

for the Grammar School; though we may say that good general ability is needed for both, and in a small proportion of cases a marked bias for linguistic or for mathematical or practical abilities may be shown.¹ At twelve or thirteen a greater interest and capacity for science and mathematics (and mechanical drawing if included) rather than for English and languages might indicate a greater suitability for the Technical School. But here we come up against the problems of future vocation.

There are very varied kinds of work in engineering and other trades for boys who have passed through the Technical School. Some approximate to routine jobs demanding chiefly manual dexterity and needing little 'g'; others involve more mechanical aptitude; still others involving planning or mathematical calculations require a high degree of 'g', but may be done well by one who is only average in manual dexterity. These highest types of technical work may well be prepared for as adequately, or in some cases even better, by a Grammar School education with specialization in mathematics and science, followed by a University degree course in, say, engineering or chemistry.

Home background and educational guidance. In the Norwood Report and the Government White Paper on the Education Act of 1944 it was recommended that in allocating children to one or other type of Secondary School there should be 'due consideration' of the wishes of the parents and the pupil.² This is desirable for several reasons. First the parents' wishes are likely to have an important influence on the type of vocation finally chosen; and as we have seen, this is closely linked with the type of Secondary School to which the pupil is allocated. Further, the child's work at a Grammar or Technical School is likely to suffer if the parents are opposed to the allocation. Facilities

¹ A thorough discussion of the problem of selection for Technical High Schools, including the most recent evidence as to specific abilities needed for them, and the possibility of testing them at the age of eleven, will be found in the 'Symposium on Selection for Secondary Schools', by C. BURT, W. P. ALEXANDER, V. J. MOORE, E. J. G. BRADFORD, J. J. DEMPSTER, E. A. PEEL, C. A. LAMBERT, and A. RODGER in the *B.J.E.P.*, 1947, 17, 18, and 19, pp. 8, 9. More recently T. F. FITZPATRICK and S. WISEMAN have shown that an Interest Test may be of value in selecting for Technical education. See *B.J.E.P.*, 1954, 24, p. 99.

² *Norwood Report*, p. 17.

may not be offered in the home for quiet study – even where it may be possible. I have known more than one University student whose work suffered because even one of the parents was opposed to it.

In some cases, however, even if the parents are agreeable to a child entering a Grammar School (perhaps attracted by its present social prestige), special difficulties may arise.

'Many bright children [writes Burt] who have been transferred to secondary schools turn out to be misfits, not because their ability was misjudged, but because of external circumstances (which in many cases were quite well known to the child's former teacher) – poverty in the home, worries over family affairs, lack of facilities for homework, lack of sympathy (among parents and friends) with the academic approach, lack of any attempt to foster social or intellectual ambitions, discrepancies or conflicts between the ideals of the secondary school and the ideals of the child's own relatives or of his friends and acquaintances outside the school – in a word, social as distinct from individual factors.'¹

Dr W. P. Alexander's reply was that to discriminate on the ground of economic status would be contrary to the essential democratic spirit of the Education Act of 1944.² The solution would seem to lie in guidance and advice given to the parents, after consideration has been given to these social and economic aspects, and to probable vocational needs, at least in marginal cases.³

School records as to character and promise. Great importance is likely to be attached, in future, to school records, whatever

¹ See his article opening 'The Symposium on the Selection of Pupils for Different Types of Secondary Schools', *B.J.E.P.*, June, 1947, 17, p. 67.

² See ALEXANDER's article in the same 'Symposium' (November 1947, p. 128).

³ Selection for different types of Secondary Schools is complicated by problems of administration unsuitable for discussion here. There are also many points of technique in dealing with examinations and tests for which the reader must be referred elsewhere; e.g., age-allowances and the special study of border-line cases in the common entrance examination if that is retained. See, for example, McCLELLAND, *op. cit.*, and the N.U.T. Report referred to above.

scheme of selection is used, and as there will usually be three types of secondary education to choose from, the guidance by the school and the L.E.A., at this stage, will be as important as ever and even more difficult. Hence the school record deserves our careful consideration.

First, we must stress the fact that the estimates of character or temperament of pupils made by their own teachers are far from infallible. Two teachers may differ greatly about the same pupils. As we have seen in the last chapter, the estimates of two teachers as to industry, conscientiousness, etc., correlated only about 0·5 or 0·54, which is about the same as that between: (a) intelligence tests alone given at eleven years of age, and (b) performance in Grammar School four or five years later. We are, however, more likely to get true (valid) judgements of a child when several teachers give independent judgements and then discuss them together and award final agreed assessments. This at least tends to check the 'halo' effect on a teacher's marks (due to the fact that a child works very well — or very badly — at his, the teacher's, particular subject) though it does not rule out the domination of the report by the child's performance in his school work as a whole. If more than that is wanted, the teacher must see a good deal of the pupil outside the classroom, on the playing field, in school societies where the pupils take a leading part, in the camp, and so on. I well remember the big mistake I made in my estimate of the character of one boy in my class. I thought him pleasant and intelligent, but lazy and unco-operative in work. Then I spent a fortnight with him in school camp and quite reversed my judgement. I came to realize that he was not very intelligent (I had been deceived by his bright pleasant manner), but was very co-operative in things which he could really manage. In the chapter on Intelligence Tests I have already mentioned that frequently teachers are so misled by the social reactions of a pupil that they fail to recognize even one on the border line of mental deficiency and so attribute lack of progress to laziness, lack of concentration, etc.

Estimates of promise. We might reasonably expect that teachers' estimates of their pupils' intelligence, and especially

of their attainments and promise, would be more accurate than their estimates of character. Let us consider some evidence which bears most closely on our problem of educational guidance. In some centres it has been customary for the Heads of Primary Schools to be asked by the L.E.A. to say which pupils they recommend should be examined for admission (at about eleven years) to the Grammar Schools.

At Birmingham children who were not so recommended by their Head were nevertheless allowed to sit for the examination if their parents wished. While the Heads were asked to recommend children they thought suitable for Grammar School education, no doubt they were much influenced by the consideration whether they thought a given pupil would pass the entrance examination or not. So far as this was so, then in Birmingham the results showed that the Heads were largely right.¹ Here are some figures for the year 1936:

	Recommended by Heads	Not recommended
Passed the examination	3321 78.8%	1981 32.5%
Failed	21.2%	68.5%

These figures, however, only refer to the children at the time of the examination. What of the later performances of those entering the Grammar Schools?

At the request of the L.E.A. Examining Board I arranged for one of my research students - Mr H. A. Evans² - to make follow-up studies of the Grammar School careers of pupils who had *not* been recommended ('at ten or eleven) by their Primary School Heads as suitable for Grammar School education, but who had persisted in taking the entrance examination for Grammar Schools and had been successful. Reports were received from the Grammar School Heads after the pupils had

¹ In the Scottish inquiry already referred to the average correlation between (a) the teachers' estimates of attainment in English and (b) their pupils' performances in the qualifying examination was 0.82. For Arithmetic it was 0.77. See M. C. GIBSON, *et al.*, p. 38.

² For details of the inquiry see MR EVANS' article in *B.J.E.P.*, 1940, 10, p. 154.

been four or five years in the Grammar Schools. The results may be summarized as follow:

(i) At the end of the first year in the Grammar School the non-recommended children fell on the average below the level of the selected. Nevertheless, about one-third of the non-recommended children were placed *above* the average. At the end of the fourth year the analysis showed a similar result.

(ii) There was a tendency for the non-recommended children to improve on their performance in the admission examination, and to pass recommended children with whom they had been bracketed approximately equal.

(iii) Approximately 25 per cent. of the non-selected children who *only just* gained admission were, at the end of the first year, classed by the Secondary Schools as being *above* the average of the whole group.

It is clear that a good many excellent pupils would have been kept out of the Grammar Schools if the Heads' recommendations had been decisive. In other words they are far from infallible in judging promise.

Prognosis of backwardness. Now consider the value of school reports so far as they are prognostic of backwardness. Burt, in the course of this testing of hundreds of London children, was able to keep records of many children at the ages of six, ten, fourteen, and even of youths of eighteen. He writes:

'I endeavoured to determine what points in the first inquiries about a young school pupil proved to be most significant for purposes of prediction as judged by his subsequent history. Marks or ratings were given for each point in the original case-summary; and correlations were then worked out between these earlier findings and the child's later record' (*The Backward Child*, p. 72).

Burt found that the relative values of tests, school reports, etc., in prophesying future backwardness were as follow: intelligence tests, 0·7; attainments tests, 0·6; school report, 0·5; family history, 0·4; anthropometric examination, 0·3; medical examination, 0·2; home circumstances, 0·2; personal history,

0·1; conduct report, 0·1. (Clearly the 'School Report' referred to progress in school and attainments, as 'Conduct' was given a separate report.)¹

It will be seen that future backwardness could be more reliably prophesied by means of intelligence tests or attainments tests than by the school report, and that the special 'conduct report' was of little value. All this, however, refers specifically to backwardness in school subjects, which as we shall see later, is most frequently due to a low degree of intelligence. The results are quite consistent with school reports being of greater value in reference to the abler pupils suitable for Grammar or Technical High Schools.

Estimates of attainment. We have already seen that in estimates of character traits two teachers usually differ greatly from one another. It is surprising, however, to find that teachers' estimates of the special abilities of their pupils are even less consistent (reliable) than are their estimates say as to 'industry'. As we have seen, a test or estimate may be 'consistent' without being true or valid, but it is of no use if it is very inconsistent and variable in its findings, and in one inquiry the reliability of teachers' estimates of Verbal, Numerical, and Manual Abilities of their pupils has been found to be only about 0·5 on the average.²

As to actual attainments in such subjects as Reading, Spelling, and Arithmetic, a teacher is somewhat more consistent than some tests of attainments.³ But we are still left with the supreme

¹ SIR CYRIL BURT assures me this interpretation is correct.

² See BURT, 'The Reliability of Teachers' Assessments of their Pupils' *B.J.E.P.*, 1945, 15, p. 83.

³ The nature of attainments tests is described later in this chapter (p. 393). Burt's findings as to reliability coefficients for his own tests and the estimates of two teachers who knew the same pupils were as follows (*op. cit.*, p. 83):

	Reliability					Of teachers' estimates
	Of tests		Reliability			
Reading	(a) Mechanical	.	.	:	0·81}	0·86
	(b) Speed and comprehension	.	.	:	0·79}	
Arithmetic	(a) Mechanical	.	.	:	0·88}	0·95
	(b) Problems	.	.	:	0·85}	

difficulty of comparing one teacher's assessments of the pupils with those made by other teachers in other schools. We have, however, already pointed out that the Heads of Birmingham Junior Schools were fairly successful in estimating which of their pupils were likely to pass the entrance examination at 11+, if that is what the Heads had primarily in mind, but they would no doubt base their judgements largely on the performance of their pupils in recent internal school tests.

Further evidence on this topic is given by the report on a wide investigation in Yorkshire schools.¹ Some 2,000 children of 10+, from thirty-nine schools, were involved. First, the staff of each school was asked 'to place their candidates in the order in which it was thought a perfect examination would place them, making every effort to allow for varying ages' (p. 19).

All these children were then submitted to:

(a) An 'old type' examination in English and Arithmetic and a Group Intelligence Test.

(b) A 'new type' examination (Moray House objective tests of attainment in English and Arithmetic) and a Group Intelligence Test.²

(c) Group tests of Intelligence only (Moray House Tests). Several important conclusions were reached:

(1) There was clear evidence that the efforts of the teachers to make due allowance for age had not been successful. This danger must always be looked for in connexion with teachers' estimates. Pupils in the same class tend to be compared with one another, irrespective of differences in age; and a boy who is big for his age is apt to be thought as older than smaller boys who are actually older than he is.

¹ See *Special Place Examinations*, Report by Committee of West Riding Teachers' Association and West Yorkshire Association of the N.T.E. (University of London Press, 1931). Professor Godfrey Thomson and Mr W. G. Bennett supervised the investigation.

² The nature of the 'new type' examination will be explained in the next paragraph. Briefly we may say it is based on a larger number of very short questions instead of a few questions involving longer answers.

(2) The correlations of the teachers' estimates with -

(a) the old type examination, plus intelligence test was 0·88;

(b) the new type examination, plus intelligence test was 0·88.

These are high correlations, but it was the custom in the area concerned for the schools themselves to conduct a preliminary examination in English and Arithmetic, together with a short intelligence test. Hence, the correlations are substantially indicators of the extent to which the results of one examination in English and Arithmetic, plus an intelligence test, correlate with the results of another examination, plus an intelligence test. Still they are high figures, for a group intelligence test alone correlates usually no more than about 0·9 with a similar group test.¹

'New Type' examinations. In the Yorkshire experiments it will be noted that the two examinations were labelled 'old type' and 'new type', and a word must be said on these, as they lead up to the study of attainments tests. First, however, I must say that the samples of the 'old type' examination papers in English and Arithmetic in the above-mentioned Yorkshire examination were really very modern and well adapted to bring out intelligence and not to reward mere cramming.

The main weaknesses of the 'old type' examination were two:

(1) The questions were too few, so that the element of luck was high.

(2) So many questions were of the essay type, in the marking of which examiners vary greatly.

As a brief test of the reliability of marking essays I once arranged for seventeen essays to be marked by a group of

¹ It has been customary for the Joint Northern Universities Examination Board to get from schools their estimates of the order of merit of pupils taking the School Certificate examination. The average correlations between school estimates and performance in the School Certificate Examination varied with the subjects. In Mathematics, French, and Latin it was about 0·75. In English, History, and Geography, about 0·65. See J. M. CROFTS and D. D. JONES, *Secondary School Examination Statistics* (London, 1925), p. 47.)

thirteen teachers in my advanced class in Education. The essays were written by pupils of eleven or twelve years of age on the topic, 'Town versus Country Life'. The teachers were asked to mark with special care, and they knew it was a test of their own reliability in marking. A maximum of ten marks was to be awarded for ideas, and ten for expression; spelling was to be ignored.

One essay was outstanding, and was placed first by ten out of thirteen markers. One essay was placed last by seven markers. But all the intermediate essays had most varied places assigned. Thus, the essay of E.S. was placed second by one examiner, third by two others, but sixteenth (out of seventeen) by another, and thirteenth by another. The essay of W.S. was placed first by one marker, sixteenth by another, and at various intermediate places by others.

Suppose we divide the awards into three groups according to order of merit, thus:

Nos. 1-6. Pass first division.

Nos. 7-11. Pass second division.

Nos. 12-17. Fail.

Then of the seventeen pupils, eleven were given a first division pass by some examiners, and a fail by others.¹

Greater agreement and consistency in marking essays can be obtained by giving marks for specified aspects, e.g., a maximum of twenty for quality and variety of ideas expressed, ten for logical arrangements, ten for variety of vocabulary, ten for mere length, five for punctuation, and so on. But such a scheme cannot be adopted for answers of the essay type in History, Literature, Geography, and Science, and the variable standards of markers are apt to reveal themselves then.²

¹ Quoted from my book, *The Reliability of Examinations*, p. 27. Further evidence as to the unreliability of essay marks will be found in Dr Ballard's book mentioned in the next footnote.

² In an article on 'The Marking of Composition' MR S. WISEMAN contends that a small group of examiners all marking each of the essays by the general-impression method can give as reliable results with the same total expenditure of time as can marking by one examiner by the itemized method. See *B.J.E.P.*, 1949, 19.

In addition, and more important, if only (say) six questions can be answered in one paper, then there will be many aspects of the subject untested, and the influence of luck may be great.

These reasons led to the devising of the new type examination, in which the pioneer in this country was Dr P. B. Ballard. The reader is referred to his admirable book for a full exposition of the whole subject,¹ but we may illustrate the principle by giving a selection from his Mechanical Arithmetic paper. That includes 100 graded items, and I give the numbers of the selected items here. The pupils are told to work the sums in their heads, if possible, but scrap paper is allowed. Fifty minutes is allowed for the test.

Mechanical Arithmetic Test

2. $9+6+8$	64. $\sqrt{81}$
9. $200 - 13$	69. 5% of 10s.
14. $63 \times 5 \div 9$	75. 3 lb. 4 oz. at 1s. a lb.
21. $4 \times 7 \times 9 \times 0$	81. Find the value of £0.375
25. $\text{£}5 - \text{£}2 12s. 6d.$	86. L.C.M. of 7, 8, and 112
27. 3 lb. 4 oz. — 1 lb. 12 oz.	89. Average of 5, 17, 17, 19
35. 2 ft 3 in. $\times 8$	91. $4:7::6:X$
39. $\frac{1}{2} + \frac{1}{3}$	95. Area of plot 20 yds. sq.
46. $\frac{3}{4} \times \frac{4}{5}$	99. Volume of water in a tank 2 ft long, 2 ft wide, $1\frac{1}{2}$ ft deep
51. $\text{£}20 \times \frac{1}{2}$	
56. $3.1 - 3.01$	

It will be seen that the whole range of school arithmetic may be covered thus in a test requiring only one hour.

Attainments tests. Attainments tests are based on two principles; the first is similar to that of the new type examination, namely, that knowledge shall be judged by a very large number of short questions, thus reducing the element of luck. The items in the test gradually increase in difficulty.

Secondly, the child should be judged by the performance in the same tests of many hundreds of unselected children of the

¹ *The New Examiner* (Hodder and Stoughton, 1923). The book includes model examination papers of the new type in Arithmetic, Algebra, English, History, and Geography.

same age as the particular child. Let me give an illustration from the Mechanical Reading Test drawn up by Burt, who was himself a pioneer of these tests in this country.¹ The child is required to read aloud the words given below beginning with those for the age two years below his own.

Age last birth- day	Words assigned to the given age					Total number of words
4 to my	is up	of or	at no	he an		10
5 his sad	for pot	sun wet	big one	day now		20
6 that just	girl told	went love	boys water	some things		30
7 carry known	village journey	nurse terror	quickly obtain	return tongue		40
8 shelves scarcely	scramble belief	twisted steadiness	beware labourers	commenced serious		50
9 projecting urge	fringe explorer	luncheon trudging	nourish- ment events	over- whelmed motionless		60
10 economy universal	formulate circum- stances	exhausted destiny	contemp- tuous glycerine	renown atmosphere		70

By testing hundreds of children in fair samples of the population, Burt standardized these tests in a similar way to that we have seen used for intelligence tests. But only half the words assigned to a given age can be done by the average child of that age. If a child who is able to read (say) forty words in all, i.e., if he does *all* those assigned to pupils of ages 7 ; 0 to 7 ; 11 he is reckoned to be of the Reading Age of seven, though he may be nine years of age or only six. If he has missed some of the words for the seven-year-old or younger, that is made up for if he can read the same number for the eight-year-old or over.

In a similar way, attainments tests for mechanical and prob-

¹ See his *Mental and Scholastic Tests* or the smaller *Handbook*.

lem Arithmetic have been standardized so that we can speak of the 'Reading Age' of a child or his 'Arithmetic Age'.¹

There are great advantages of such standardized tests of attainment.

(1) We can compare a boy's performance in each of his school subjects with his general intelligence. If, for example, a boy aged ten, with mental age also of ten, scores a Reading Age of eleven, but only of eight in Arithmetic, there is reason for inquiring into this specific backwardness.

(2) We can compare reports on a boy's attainment in various subjects over several years. Any marked retrogression should be inquired into.

(3) We can compare the performance of children in one school with children of the same age in another school, without a competitive examination. Or we can compare the average performance of different classes in the same school.

(4) The records of attainments in various subjects are very useful if the child is removed to another school, or, failing such records, the standardized attainment tests can be given to the new boy on entry.

On the other hand we must recognize the limitations of achievement tests and admit that there are elements of educational value, wider interests, for example, which escape them, but which may appear in the general work of the school. But the same limitation applies to any form of examination.

The value of attainment tests (as well as intelligence tests) to the class teacher is well illustrated by the report of one who tested his own class in a Modern Secondary School, average age thirteen years. He found a range of I.Q.s from 70 to 100, of 'Reading Age' from five to thirteen, and 'Arithmetic Age' from seven to eleven.²

¹ Details of the Arithmetic, Spelling, Reading, and other tests, and full instructions and norms will be found in Burt's book already referred to. More elaborate tests on reading and more recent standardizations will be found in PROFESSOR F. J. SCHONELL's *Backwardness in the Basic Subjects*, a comprehensive and thorough study of the subject.

² See J. CROFT, *B.J.E.P.*, 1951, 21, p. 135.

The use of school record cards. We can now return to the question of the use of school record cards. By the use of standardized attainment tests, progress in a subject may be recorded objectively from year to year. To these may be added the reports of the teachers on progress in the subjects for which they are responsible. The need to make these reports for a permanent record should itself lead to more careful observation by teachers of individual pupils.

On the card should be shown records of absences and illnesses, which may explain lack of normal progress. The record should, of course, include all the pupils' results in intelligence tests, preferably for each year of the school life; his mental age should be stated and his I.Q. It is of great importance that the teacher should know the pupil's mental age as compared with that of the average mental age of the class. Reports of home conditions, if available, may also help to an understanding of the child, especially as to behaviour. The records should also include reports on conduct.

It is sometimes argued that past entries in a record card are of use to a teacher when the pupil first comes to his class, and on the whole the objective records and tests results certainly should be. But records as to behaviour and attention to studies should not be taken as final. For a pupil who has been 'difficult' with one teacher, or shown little interest in a subject as taught by him, may become better behaved, or much more interested in a subject, when he moves to a class taken by another teacher. One boy, for example, was marked as follows for conduct in four successive years (ages 6 ; 10 to 9 ; 10) D, B, C, A.¹ On the other hand, when a teacher finds a pupil difficult or inattentive, though his record previously was very good, it is a hint to the teacher to look into his own attitude to this pupil in his methods of teaching.

We must not, however, expect uniformity in progress in each subject. Different stages of the same subject may involve different degrees of 'g' or of special abilities, and may appeal to different interests. Some American records indeed show great

¹ See C. W. ST JOHN, *Educational Achievement in Relation to Intelligence* (Harvard University Press, 1930), p. 161.

variations in standardized attainment tests in successive years. Thus, in one inquiry, the correlation between achievement in different years among 600 pupils, even in Reading - which one would expect to find very consistent - was only 0·5 and in Arithmetic (among 1,300 pupils, the average correlation was only 0·4).¹ If the reliability (consistency) of the tests themselves was low, that would account partly for such low correlations.² But the consistencies of achievement, as measured by teachers' marks, were no greater. Thus the correlations for Arithmetic were: Boys 0·35, Girls 0·44. In the same inquiry the correlation between conduct reports in successive years averaged only 0·45. By contrast with these low correlations we may mention that the results of intelligence testings over the same period of up to four years correlated to the extent of about 0·9; in other words the I.Q.s remained remarkably constant.

Obviously, much will depend on the thoroughness and precision of the testing and of the teacher's markings, and on the consistency of the tests. The problem is one well worth further research. Indeed, one must regard the whole question of the nature and use of school records as at present in an experimental stage, and all records should be treated as provisional and not as final reports on the child's abilities or educational promise.

As to conduct indeed we cannot yet be certain what is the ideal type of behaviour of, say, a boy of seven or eight with a view to his later adult character and personality. We have already seen that some obstinacy and rebellion in children between about two and five affords better evidence of later strength of character than does a too submissive attitude. Is it a good sign of later development if a boy of nine is always attentive even to very dull lessons, or if he never fights with other boys? As the pupils get older we may reasonably expect greater stability and responsibility, yet when adolescence is

¹ *Op. cit.*, pp. 125, 126.

² ST JOHN accepts the findings of other American investigators that the reliability (consistency) coefficients of attainment tests vary between 0·6 and 0·85 (see p. 33 of his book). The reliability coefficients of Burt's tests in Arithmetic were about 0·86 and in Reading about 0·80, as given in our footnote, p. 389. See *B.J.E.P.*, 1945, 15, p. 83.

reached there may be considerable changes. If we are to take adult life and character as the final test, as we surely should, it is still harder to be sure of our ground.

Still, the school must be concerned especially with the next stage of the pupil's development and education. In the Primary School therefore, schools records should be adapted primarily with a view to guiding the child into the right type of secondary education. Teachers should make careful note of the age of each child. There is evidence that those only just over ten are apt to be judged by the same standard as those just under eleven. The same error has been shown even in grading.¹

The purpose will be different in the Secondary Schools. There, as the end of school life approaches, the school should surely interest itself in the question of the child's future occupation, and special education for it, e.g., technical or commercial.² It seems certain that much more will soon be done in the nature of vocational guidance; indeed, the Report of the Committee on Juvenile Employment Service (Ministry of Labour and National Service) states it will be 'essential in future for teachers to understand that they will be expected to give an estimate of every child at the end of his school career on the lines set out'. Those lines include such items as attainments, general intelligence, special abilities, and health.

If the school reports on character and abilities are to be of service to the vocational advisers it is desirable that they shall be couched increasingly in terms which have a real significance for the work of vocational guidance,³ to which topic we shall turn in the next chapter.

But we may end this chapter with some general conclusions of the British Psychological Society Committee as to the various means of selecting pupils for Grammar Schools. They state that

¹ See H. Clark, 'The Effects of a Candidate's Age upon Teachers' Estimates', *B.J.P.*, 1951, 26.

² The value of school records for this is shown in an inquiry by D. H. Willcockson, *B.J.E.P.*, 1953, 23, p. 64.

³ See A. Robins, 'The Juvenile Employment Service', *O. Vocational Psych.*, April 1946, 20. It is suggested that the key analysis for school reports, physical make-up, attainments, intelligence, and other test results, should be the same as those in the 'Job Analysis' reports.

the usual combination of Intelligence, English, and Arithmetic tests reaches a very high degree of validity, the intelligence test being usually the best single predictor.¹ Yet in spite of this general validity some errors round the margin of selection are inevitable. Some 6 per cent. of those rejected (when the entrance to Grammar Schools is about 20 per cent.) would do as well or better than some of those successful. (This inevitable overlap was the ground of my recommendation in my book *The Reliability of Examinations* (1932) that transference to and from the Grammar Schools at twelve or thirteen should be facilitated.)

The 'border zone' of doubtful cases should be taken as wider than is now usual, and should be given further special consideration, perhaps including a further examination paper. As to the value of including in this one English composition there are marked differences of opinion,² even then, I may add, in view of further uncertainties in later performances by the children selected at ten and a half years – due to differences in conscientious application, home influences, etc.; there will be an inevitable series of misplacements. It has, for example, been found that children doing worse in a Grammar School than was to be expected from their entrance examination results came from poorer homes on the average, while children doing better in a Central School than might be expected from their 'entrance examination' results came from better homes.³

To a psychologist the most immediate solution of the problem of misplacements seems to be the improvement in the top classes of the Secondary Modern Schools. As to the alternative of the Comprehensive Schools, I repeat it is not the business of the psychologist as such to decide. It is a question of administration, and the dealing with difficulties of staffing and equipment, the special problems of very large schools, and the spread of the desire of parents that their children should stay at school beyond the age of sixteen. There is evidence that early

¹ *School Selection*, edited by P. E. VERNON, 1957, p. 171.

² See 'Some comment on the Use of Essays in Selection at 14', *B.J.E.P.*, 1956 and 1957, 26 and 27.

³ See W. J. CAMPBELL, *B.J.E.P.*, 1952, 22.

leaving at Grammar Schools is not dependent on poor selection, but is rather a social phenomenon.¹

It is to be hoped that the work in the Secondary Modern Schools will be so developed that the disappointment of children who fail to get into the Grammar Schools will be greatly lessened. The success of an increasing number of Secondary Modern pupils who take a five-year course for the G.C.E. should do much to help this. Still further improvement should follow if and when the school-leaving age is raised to six.

¹ See M. COLLINS, *B.J.E.P.*, 1954, 24.

CHAPTER XXVII

VOCATIONAL GUIDANCE

This is a somewhat specialized topic, and for a technical study of the subject the reader must be referred to books and journals dealing specifically with it. The technique of vocational guidance has been enormously improved through the pioneer work of the National Institute of Industrial Psychology. Adequate guidance involves a knowledge not only of the best tests of general and special abilities but also of the particular abilities and personality qualities needed for different occupations. Here we shall discuss only the broader aspects which are of most interest to the teacher.¹

Misplaced vocational training. We have already seen that to a considerable extent educational guidance and selection at 11+ involves vocational guidance. Still, there will be many alternative occupations open to the Grammar School boy of 16+, and to the Modern School boy of 15+, or even for the Technical High School boy of sixteen. It is too often forgotten that special vocational education is not always used later on by the youths concerned. Thus one of my research students followed up the subsequent careers of his pupils in a mixed Central School (ages eleven to fifteen or sixteen) who had had a special training at the school in shorthand, typewriting, etc. Such vocational courses were selected at the age of thirteen. The employment records covered from one to four years after leaving school. Of eighty pupils who had studied shorthand, only 15 per cent. had used it after leaving school. Of eighty who had learned book-keeping, only 25 per cent. had used it subsequently. Of fifty-three who had learned typewriting, only 30 per cent. had used it. Engineering drawing (131 boys) gave the

¹ For further reading the student should refer to *Occupational Psychology* and its predecessor *The Human Factor in Industry* as well as to books referred to in this chapter.

higher figure of 46 per cent., but French, taken, the investigator thought, partly on vocational grounds, gave the low figure of 4 per cent. among 181 pupils.¹

Among boys (aged thirteen to fifteen), who followed a course in a Junior Technical School in Birmingham, designed especially for engineering, 32 per cent. entered non-engineering jobs, chiefly clerical.² In both these investigations it will be seen that vocational courses were begun at thirteen, not eleven. Yet even then, for a substantial proportion, the selection proved of little or no use. In the case of the Central School, reports suggested that this was largely due to the fact that occupations desired by the pupils were not open to them, so the majority took the first job offered. Clearly the problem of vocational guidance is partly one of adapting the children of a given district as a whole to the relative number of openings in various types of occupations, especially those in the locality.

In some cases, in the two inquiries mentioned above it may well be that later development and experience revealed to the youth previously latent interests in, and capacity for, other kinds of work. There is little doubt that this frequently happens. Hence, it appears desirable to defer selection of occupation, and special training for it, beyond the age of thirteen, and that vocational guidance before fourteen must often be hazardous. This is indeed what we should expect in view of the changes that take place so frequently during adolescence, as we shall see later.

The raising of the school age makes useful vocational guidance more possible, because special abilities are further developed and permanent interests more likely to be appearing, though even fifteen is young for this, especially among the ablest pupils. It is not contended here that it is the business of the teacher to give definite advice as to which occupation should be chosen. The final work of vocational guidance is one for the expert specialist, who must be familiar, first, with a great variety of occupations, and the qualities and abilities

¹ See report by A. D. HAWKINS in *B.J.T.P.*, 1931, 13, p. 105.

² See *City of Birmingham Report on Selection of School Attitudes for the Engineering Trades*, by L. PATRICK ALLEN and PERCIVAL SMITH (1930) p. 9.

needed for them, and second, with the technique of interviewing the youth and of testing his specific abilities. But the expert in vocational guidance will need the co-operation of the school, where much can be done. First, the school report as to character and as to attainments may be of value when the technique of estimating is more widely acquired and especially when the report includes records of general and special ability tests. The school can also do something by arranging for talks or films about the nature of various occupations.

Pupils' ignorance as to the nature of occupations. At least it would seem we should provide young people with some definite information as to the kind of work they would be engaged in if they chose certain occupations. It may be imagined that they would 'pick up' this sufficiently from hearsay or direct local experience, and in some cases this is no doubt true. A boy may see in a local garage the kind of work he would be required to do if he joined the staff there. But the ignorance, and worse, the wrong ideas as to many occupations chosen, even by Grammar School pupils, is surprising, as was revealed in an inquiry I made, with the collaboration of Miss F. M. Ritchie (now Mrs Austin) among Birmingham Grammar Schools.¹ The inquiry was made in two large Grammar Schools, one for boys and one mixed. I give first some of the results for the boys' school. They were asked first to state what occupation they wished to take up and to give their reasons. Afterwards they were shown a list of fifteen possible reasons and asked to select those that had influenced them, putting them in order of importance. The pupils gave nom-de-plumes and were assured that their replies would not be seen by anyone connected with the school. I must refer readers to the report for details, and can give here only some main results.

¹) Even among the senior boys (Forms V and VI, numbering eighty-seven), it was clear that more than half were choosing their occupations for inadequate reasons, or had themselves very inadequate ideas of the reasons why a given occupation was being chosen for them.

¹ See our article in the *Forum of Education*, 1927, 5.

(2) There were many strange misconceptions as to the proposed occupation, e.g., (a) one boy (16; 0) wanted to become a chartered accountant because he is fond of travelling. It turned out that a friend of his, having passed his qualifying examinations, had gone to South Africa. (b) A boy (17; 6) was entering the home Civil Service, partly because he wanted opportunities for foreign travel. (c) A boy wanted to be a private secretary 'perhaps because of my ability for mathematics and for learning French'. (d) Bank clerk (15; 9), 'because I am fond of modern languages'. (e) Commercial traveller (15), 'because I shall be able to see more of the world, which shows us how insignificant man is'. (f) Dispenser (14; 6). 'Mother suggested it because I am rather good at Latin.' (g) Customs officer (12; 6). 'I would see a variety of places and travel.'

To these we should, perhaps, add several boys about sixteen years of age who seemed to think that a liking for mathematics is a guarantee that they will like the work of a bank clerk.

Among the 292 girls in the mixed school, inadequate reasons were even more frequent than among the boys - four-fifths against one-half.¹ Replies showing quite wrong information or ideas as to the job chosen were not so frequent as among the boys, but some striking ones occur, e.g., *Private Secretary*, Age 13. 'You usually travel about with the person you work for.' Age 15. 'I should probably have to answer my employer's correspondence in the morning, and have all the rest of the day to myself.'

As to *Teaching* - vague, inaccurate, or irrelevant ideas are frequent. One girl wrote, 'My parents agreed that, as I had bad headaches occasionally, I needed a profession where holidays were frequent.' Another wrote, 'While a teacher I should have to travel about to different schools.' (Probably she had a friend who had been 'on supply').

Of course not all the pupils were so misinformed. We classified the reasons given spontaneously as 'excellent' or 'good', 'moderate', 'poor', or 'very poor'. Of the eighty-seven senior

¹ See article by F. M. Ritter, *Forum of Education*, 1930, 8, p. 89.

boys only thirty-six could be classified as 'good' or 'excellent', and we were generous in our estimates. As mentioned above, the girls' reasons were not so good.

Information, however, is only one aspect of our problem, though an important one. Let us consider some other facts revealed by our inquiry.

Dominant reasons for choosing an occupation. It appeared that the ease of getting a job, or the actual offer of one, was one of the main motives for one-third even of the senior boys, e.g., 'Father (or other relative) can easily get me a job.' Boy (16; 1), reluctantly going into a printer's office, wrote, 'My uncle is a manager there and tells me he has a good situation open for me. Well, such is life. The majority of men are not what they would prefer to be but what other people prefer them to be.'

Forty-one per cent. of all the boys mention the father's wish, and 25 per cent. the mother's wish among the four most influential reasons. There was a widespread desire for a clean and respectable job.

Here are examples:

Boy (15; 9) is to become a teacher at parents' wish; really longs to go into the motor trade, but 'if I were to go into engineering the education which, though but little, has been costly, would be wasted'.

Boy (15; 8) wishes to become a bank clerk. 'Fairly clean and a profession fit for a Secondary School boy.'

Boy (15; 4) is to become a teacher. 'One mixes with a different class of people than those one finds in factories.'

Boy (15; 11) wishes to become a bank clerk because 'there would be no strikes and the class of people with whom I should have to work would be quite as good if not better than any other occupation.'

If we add the number of cases of three types of motives - the trivial or irrelevant motive; the mere ease of getting a job, and the anti-manual, respectability or cleanliness reason, we get a number which is 31 per cent. of the total number of boys.

With about one-third of the boys and one-quarter of the girls there is an intimate connexion between their *liking for a*

school subject and their choice of an occupation with which it is closely connected, or for which they think it fits them. In some cases it is evident that the liking for, or excellence in, a given school subject is misleading as a guide to a choice of occupation.

A rather notable thing is the slightness of the teacher's influence; 15 per cent. of the girls do include it in their marked lists, but only seven out of eighty-seven senior boys refer to it at all, though I knew the headmaster to be a man of unusual influence, taking a broad interest in his pupils. Little time, undoubtedly, can be given by the heads of large schools to dealing with the question of future careers of their pupils even if parents seek such help.

One of the compensations for the work of analysing a great many answers in such an inquiry is that one comes across many naive and humorous replies. I cannot refrain from quoting a few. 'I was influenced by a professor when I had my bumps felt at Weston-super-Mare.' Suggested occupations were Postmaster-General or office clerk - 'an occupation requiring writing or additional (*sic*) work'. 'I like office work because I can write easily in many forms, large, small, and medium sizes.' One boy of sixteen, who is to become a chemist, writes: 'Father thinks I am fitted for the subject and *he* likes it.' Prospective teachers should certainly note the following by a boy who had decided to become a teacher. This deluded youth writes: 'It is a very easy life. In Secondary Schools the master uses the same books and teaches the same things from year to year. He does not soil his hands so to speak. He needs only to remember his schooling.' 'The teacher gives his class something to do and all that he does is to see that it works properly. Of course, I may be wrong, but as far as I can see this profession is the only one that would suit me.'

Perhaps the gem of the collection is the following by a boy of thirteen: 'The profession that I have chosen is that of a lawyer. My reasons are that I have the gift of being a good talker and linguist. What influenced me was how I got out of scrapes at school or at home with ease by using my tongue and not necessarily telling lies about it.' (The italics are mine.)

In view of the basis of interest in occupations revealed in the above inquiries, it is not surprising that the correlations between vocational interest and *ability* for the occupation may not be high. In one inquiry it was estimated that among adolescents such a correlation was only about 0·25 and among adults no more than 0·5.¹ So that even if youths could be placed in *desired* occupations a high degree of adjustment would be needed on the basis of *abilities*. Before we turn to that topic, however, I should point out that the inquiry made by Miss F. M. Ritchie and myself was dated 1927. With the increased awareness in the schools of the importance of vocational guidance in recent years, one might expect some improvement in the knowledge of pupils themselves. Talks to pupils are sometimes given about types of occupations. (Birmingham had arranged for Regional Broadcast talks before our inquiry.) In some places films have been shown, and visits arranged to large local industries. One later research in 1938-40 gives us some evidence on this point. Miss Joan Lingwood made an inquiry among 186 girls in a Grammar School, basing her method on that which I planned for the Birmingham inquiry.² She found nearly 40 per cent. showed 'seriously inadequate' information about the careers they were choosing, the percentage being reduced to 25 per cent. among the older girls. Even among the fifth-year girls, only 35 per cent. had really 'good and correct' information. This does not suggest much improvement on our earlier inquiry. A more recent inquiry among 200 boys and girls in a Secondary Modern School reveals a very similar situation.³

In this school the experiment was tried as to the effects of special instruction about vocations. Weekly talks were arranged, one lecture on each career by a person holding a responsible position in it. The girls asked numerous questions after each lecture. The questionnaires were then answered again by the girls, and it appeared that somewhat better

¹ See D. FRYER, 'Intelligence and Interest in Vocational Adjustment', *Pedagogical Seminary*, 1923, 30.

² See her article in *Occup. Psych.*, October 1941, 15.

³ See G. Jahoda, *Occup. Psych.*, 1940, 23.

reasons were now given for the jobs on which talks had been given and that the fourth-year girls gained as much as did the fifth-year School Certificate classes.

Inquiry among young wage-earners. I thought it useful to supplement my own above inquiries in Grammar Schools by one among youths who had already entered their chosen occupation. A questionnaire was given to seventy boys (ages fourteen to seventeen) attending evening classes in a Technical School in Birmingham in 1927.¹ As these courses were being taken voluntarily, the pupils were probably somewhat more intelligent and far-seeing than an unselected group would have been.

On the average, the youths had been in their jobs about one year. The most striking results were the following:

(i) Out of seventy pupils, twenty-seven spontaneously said they chose their job because it was the only one available. This number was increased to thirty-one when a list of reasons was given the boys to mark.

(ii) Out of seventy pupils, forty-nine said no other job was even considered.

(iii) Of twenty-three boys who now wished to change their job, twenty-two were among the twenty-seven mentioned under (i).

It was clear that economic need was the dominant motive in these first choices.

I now asked the boys who wished to change their jobs to give reasons. Twelve fancied they would like the new job. Seven said it would be 'secure'. The economic compulsion, however, is largely removed in this second choice; and we may raise the point as to whether the advice of vocational guidance is not likely to be followed more earnestly by some young people when they are already in an occupation. Certainly the possession of some job is not a justification for thinking vocational guidance unnecessary. Such guidance seems to be equally needed even after experience of one occupation, for the reasons given for preference for a new job are on the whole flimsy. For example, a boy who wants to go into 'oil and colour' work is

¹ See my article in *The Human Factor*, 1933, 7.

'fond of machinery'; the motor engineer (by compulsion) wants to change to electrical engineering because 'motor engineering will not last many years whereas the electrical is more thought of'.

In a still more recent inquiry among young workers (150 girls and 68 boys ages fourteen to eighteen) in two factories the following points emerged:

(1) There had been little careful choice or guidance. Thus the chief reason for one-third of the girls had been that they had relatives or friends in the factory.

(2) There was much dissatisfaction with the physical conditions. The young people contrasted these with those of school, where their physical welfare was cared about.

(3) There was a strong feeling that they were not learning a useful trade.¹

It seems clear that even when compulsory part-time education till eighteen is instituted there will still be need for further vocational guidance and a better opportunity of gaining an intelligent response to it.

The general intelligence needed for various occupations. A first rough guide to possible occupations may be obtained from the pupil's I.Q., which at least may set a limit to the choice. Clearly for a very dull youth of I.Q. eighty to ninety, it is useless to aim at, say, the medical or teaching profession, as he would not even pass the necessary examinations, even if he somehow gained admission into a school which provided courses up to matriculation. But a limit to choice should also be set by a high I.Q. For discontent is likely to follow if a man's job is far below the level of work of which he is capable. Burt indeed found that such a situation in some cases was a partial cause of juvenile delinquency.²

Various estimates have been made of the degree of general intelligence needed for, or usually found in, various occupations. For example, the wide application of tests to men of all kinds of occupations in the British and American Armies, and

¹ See 'The Adolescent in the Factory', by CORA TENFN, *B.J.E.P.*, 1947, 17.

² See *The Young Delinquent*, p. 351.

in this country Civil Service Tests for ex-service candidates, afforded evidence at least of the general intelligence of men in various jobs, though not all might be doing the work satisfactorily.

A useful table, Table IV, is taken from the section by

TABLE IV

Intelligence Levels in Different Schools and Vocations

(1) Level of intelligence (in mental ratio)	(2) Educational category or school	(3) No. of children (in per- centages)	(4) Vocational category	(5) No. of Male adults (in per- centages)
1. Over 150	Scholarships (University honours)	0·2	Highest profes- sional and ad- ministrative work	0·1
2. 130-150	Scholarships at Grammar Schools	2	Lower profes- sional and tech- nical work	3
3. 115-130	Central or higher elementary	10	Clerical and highly skilled work	12
4. 100-115	Ordinary elementary	38	Skilled work. Minor commer- cial positions	26
5. 85-100	Ordinary elementary	38	Semi-skilled work. Poorest commer- cial positions	33
6. 70-85	Dull and back- ward classes	10	Unskilled labour and coarse man- ual work	19
7. 50-70	Special schools for the men- tally defective	1·5	Casual labour	7
8. Under 50	Occupation centres for the ineducable	0·2	Institutional cases (imbeciles and idiots)	0·2

Spielman and Burt in the *Industrial Fatigue Research Board Report*, already referred to (p. 372). It gives estimates of the I.Q.s of children in different types of schools or classes and the occupations which it is suggested roughly correspond to them.

The column on the right shows the approximate percentages of persons actually in the occupations mentioned, and the authors point out that these percentages evince a marked similarity to the percentages of children falling within successive grades of intelligence.

The distribution under schools in the table needs some modification in view of the extension of Secondary Education even before the 1944 Act. Many children with I.Q.s between 115 and 130 entered the Grammar Schools. Also in the community as a whole there may be a tendency towards a gradual increase of clerical and skilled work, witness, for example, the recent expansion in the Civil Service and in Local Administration. But the table does illustrate an important principle which should be borne in mind in considering the problem of vocational guidance.

We must, however, also bear in mind that the range of general intelligence, even of persons successful in a given type of occupation, may be very wide. For one reason, there may be great variation or difficulty in the kinds of jobs in one occupation with the same label, e.g., clerical. Also lower 'g' may often be compensated for by exceptional conscientiousness or persistence, or by a high degree of the special abilities needed in the given occupation. In one investigation among persons actually engaged in various occupations there was found among thirty-one cabinet-makers a range of I.Q.s from about 74 to about 112; among 250 nurses from 102 to 136; among ninety elementary schoolteachers from about 126 to over 150.¹

In many occupations indeed a substantial range of intelligence is desirable, as some persons will be needed for higher administration in planning work after experience in the more routine work.

¹ See R. B. CATTELL, 'Occupational Norms of Intelligence', *B.J.P.*, 1934, 35, p. 21.

Finally, as some leading authorities¹ on vocational guidance have emphasized, we do not yet know enough about the level of intelligence needed or desirable for success in various occupations, to be precise in our conclusions based on general intelligence tests. Nor, of course, does anyone suggest that intelligence is the only factor, or always the most important to be considered.² Temperamental qualities, specific abilities, and educational level may be equally important. Nevertheless, knowledge as to the innate general intelligence of the youth may at least check the choosing of an occupation quite outside the range of his ability. In an inquiry as to occupational choices among over 500 High School students in America it was found that even among senior students (ages seventeen to nineteen) from 10 to 15 per cent. of those with I.Q.s below ninety-five wished to enter professional occupations (not including clerical) and 'a large proportion were choosing jobs "beyond their mental capacities", giving evidence of their youthful enthusiasm'.³

A more recent and thorough inquiry than any of the preceding is that by Dr Mary Wilson on the vocational preferences of over 4,000 Secondary Modern School pupils in Ealing.⁴ She concluded that over 70 per cent. of the pupils made reasonable choices in view of their estimated intelligence. The boys' choices were fairly well in accordance with local demands, except that too many wanted to be carpenters and printers and too few clerical workers. Among girls too many chose hardressing, dressmaking, and (surprisingly) nursing, if we judge by the percentages placed by the Youth Employment Bureau.

Important factors in influencing choice were still the parents' occupation (though over 130 children did not know what it

¹ E.g., G. S. MYERS, 'Some present-day Trends in Vocational Psychology' *B.J.E.P.*, 1936, 6.

² See ALICE RODGER's article in *Child. Psych.*, 1939, 12, p. 139. P. E. VERNON and J. B. PARRY point out that 'occupational suitability and therefore occupational level' depend on verbal and educational factors as well as on 'g'. See *Person and Society in the British Isles*, 1941, p. 161.

³ See article by V. H. FERGUSON and HELEN MATHISON, *America in Year of Educ. Psych.*, 1946, 37.

⁴ See *B.J.E.P.*, 1938, 23, pp. 97 and 196.

was) the experience of other acquaintances, interest in relevant schools subjects, and visits to actual workshops.

Vocational tests of special abilities. The National Institute of Industrial Psychology has had unrivalled opportunities of studying the value for vocational guidance of special ability tests. The head of that vocational guidance work wrote that the six special aptitudes – ‘mechanical aptitude, manual dexterity, aptitudes for figure work (number), verbal fluency, and aptitudes for drawing or music, are probably the only ones which are of much *general* value in vocational guidance’.¹ More highly specific tests are of value chiefly for vocational selection as contrasted with vocational guidance. A word must be said on the distinction between these two.

In *vocational guidance* we start with the individual, estimate his various capacities, and then consider a group of possible occupations for him and recommend the one for which he seems most fitted. In *vocational selection* the approach is from a given occupation. The employer wants, say, a dozen youths for engineering. From fifty applicants he selects those who show the greatest capacity for the specific work. It is quite possible that the dozen youths selected include one who, though doing the engineering work well, would have done far better for himself as a salesman or a clerk; but that is not the employer’s concern.

For such vocational selection more specific tests are often of value, for example, clerical tests of accuracy and speed; e.g., in checking items, simple work with figures, etc., Again in engineering highly specific tests in manual dexterity or mechanical ability have proved of value. As we saw in Chapter I, careful selection on the basis of tests led to a much greater output of accurate work in a bicycle ball-bearing factory. Of course, the vocational guider, when he knows there are a large number of vacancies in a certain occupation and a good number of his youths are inclined to take up the work, may legitimately use such highly specific tests. Thus, in the well-known Birmingham investigation, large numbers of youths wishing to become

¹ See A. RODGER, ‘The Juvenile Employment Service’, *Occup. Psych.*, 1946, 20, p. 76.

engineers had specific tests in manual dexterity, mechanical aptitude, etc., and it was found that those who did well in the tests were much more frequently successful in their subsequent work than were the others. 'Follow-up' studies were made, ignoring reports on those who had been less than six months in a job. Both boys and employers were asked to say whether they found their job (or the boy) 'very satisfactory', 'satisfactory', or 'unsatisfactory'. Of the boys who said their jobs were 'very satisfactory', it proved that thirty had been in the top third of the tests, while only eighteen had been in the bottom third of the tests. Of the boys reported 'very satisfactory' by the employers, twenty-three had been in the top third of the tests, against only seven in the bottom third. The numbers when both boys and employers reported 'very satisfactory' were sixteen against only four.¹

In another investigation 300 engineering apprentices (average age sixteen and a half) were given intelligence and special aptitude tests (including Form relations, Space perception, and Figure construction). After about two and a half years in their jobs their efficiency was assessed. It was found that the correlation of successful work with the tests was as follows:

	Special aptitude tests	Intelligence tests
Average for 200 trade apprentices	0.52	0.39
Average for 100 engineer apprentices	0.49	0.46

It will be noted that for the higher type of work (engineering apprentice), the intelligence test had greater prognostic value. For the trade apprentices the special aptitude tests were more valid but, of course, 'g' would be involved to a considerable extent in these.²

More general considerations in vocational guidance. We must not leave the impression that either general intelligence or special ability tests are the only or even the most important items in

¹ See *Selection of Skilled Apprentices for the Engineering Trades*. Report of Research by E. P. ATLEN and P. SMITH. City of Birmingham Education Committee, 1939, pp. 12 and 13.

² See FRANK HOLLOWAY's article in *Occup. Psych.*, 1943, 17, No. 4, p. 181. I have averaged approximately the correlations for the two groups.

vocational guidance. No competent vocational adviser has ever maintained this. Indeed, the leading psychologists who have specially dealt with vocational guidance have stressed the importance of other factors.¹ Thus we must take into account temperament (especially sociability) and character, the youth's own interests, physical development and any special disabilities, the home environment, and economic factors. It is only when all these aspects are considered by the vocational adviser, together with the results of tests, that sound guidance can be given. For example, of two youths who are about equal in general intelligence, with no outstanding special abilities, one may be very fitted for work as a salesman or commercial traveller; the other, being very shy or not enjoying dealings with people, may be quite unfitted for it.

Of 639 youths advised by The National Institute of Industrial Psychology in this country, among those who followed recommendations not based *merely* on tests, the ratio of success was fifteen to one. For those who did not follow them it was only two to one.²

The school's function in vocational guidance. It is mainly by reports on all the various aspects of the boy's attainments, special aptitudes, and health that the school's reports can help the vocational adviser, if they are carefully planned as we suggested in the chapter on educational guidance. If the school reports include records of general intelligence tests those, too, will be valuable. Tests of specific abilities will as a rule be best applied by the expert specialist, though some L.E.A.s are aiming at having one teacher in each Secondary Modern School who has had some special training in the application of tests.³

Apart from testing, we may hope that the head of a school, or a special careers master, may at least be able to discourage

¹ See, for example, C. S. MYERS, 'Present-day Trends in Vocational Psychology', *B.J.P.*, 6, p. 225.

² See *The Human Factor*, 1957, 11, p. 16. A great mass of evidence as to the value of vocational tests for various branches and trades in the Armed Forces will be found in *Personnel Selection in the R.C.A.F.*, by P. E. VERNON and J. B. BARRY (1948), especially in Chapter XII.

³ For some years Barnet has arranged for selected teachers to have special short courses in vocational testing.

the choice of occupations altogether unsuitable for the youth. In recent years progress has been made by the development of the Youth Employment Service, officers of which attend schools to interview and advise leavers. They are likely to be more familiar than are teachers with the nature of the jobs available in the district. It is undesirable that the schools should take the final responsibility for definite guidance into a specific type of occupation; nor are they likely to wish to do so. There is one profession, however, as to which teachers have special knowledge, namely, the teaching profession itself. Should they not be able to advise senior pupils whom they know well to take up, or avoid, teaching? And are the usual reasons for the choice of the profession good ones? The importance of this for education justifies our special consideration.

The choice of the teaching profession. In reference to this, Mr Alec Rodger writes:

'Most boys and girls have better opportunities for gaining a personal impression of the requirements of the teaching profession than they have for studying the requirements of other occupations. Yet all principals of teachers' training colleges are aware that many of those who seek entry to the profession are unfitted for it.'¹

Suppose we grant Mr Rodger's final comment; but what of the motives for the choice? As to this I made an extensive inquiry among about 400 graduate students in training in four universities. A detailed anonymous questionnaire was given them, and they were asked to indicate what reasons influenced them most in the original decision to become teachers. The following were some of the main conclusions:²

(i) The evidence was strongly against the view that advice or persuasion by head teachers was an important reason for choosing the teaching profession. In fact, that was last but one among sixteen reasons for the men, and last but two for the women. The general influence of an admired teacher, on the

¹ *Occup. Psych.*, 1938, 12, p. 189.

² Details will be found in my article in *B.J.E.P.*, 1934, 4.

other hand, was a more frequent factor. In a few schools apparently pressure was put upon many pupils to become teachers.

ii On the whole, the most influential reasons were as follow, in order of importance:

Men	Women
Economic desirability	Interest in favorite studies
Board of Education Grant	General desire for teaching
Interest in favorite studies	Fathers' wish for children
General liking for teaching	Economic desirability
Parent's wish	Board of Education Grant
Long vacations	Parent's wish

It should be made clear that the 'Board of Education Grant' referred to was given to students expressly for the purpose of preparing for teaching. It entitled many to go to a university who could not otherwise afford it. Indeed, among those who did receive such a grant (the great majority) it provided the most influential motive of all.

Other students wished, above all, to continue to be concerned in some way with their favourite studies, and felt that teaching gave them the best opportunity for this. As such a large number would have to teach quite junior pupils, they were likely to be disappointed in this. The expense and length of a University education came up again as a factor influencing the choice, by girls, of a two-year training college course instead of a University course, and exemplified the connexion for girls between choice of vocation and the possibility of marriage.

Vocational choice by girls and the likelihood of marriage. In the last inquiry I have just referred to I found that a considerable number of girls who had entered a two-year training college, or the two-year (non-graduation) division of my University Education Department, had done so because they expected to marry and did not think it worth while spending four years on their training when they might be teachers only for a few years. The greater employment of married women teachers may affect such choices in future, but the problem is evidently a general one for girls. The likelihood of marriage affects the willingness of the girls to go through a long training, and of their parents to bear the expense. Another investigator found that over twice

as many girls wished to drop their jobs after marriage as wished to keep them.¹ There was a greater tendency for the clever girls, than for the less intelligent girls, to wish to retain their occupations after marriage. So far as such retention means the lesser likelihood of children, it would have an unfortunate effect on the average intelligence of children born; but it would not be appropriate to discuss that topic in this chapter.

Very relevant to our present topic, however, is the natural preference of many older girls for jobs where they are likely to meet men. This question of marriage emphasizes even more the complexity of the problems before the vocational adviser, his need for broad wisdom, and the value to him of a wide experience of life. Yet I would conclude this chapter by repeating an early point, namely, that the choice of occupation by a youth is so often made in great ignorance, or for minor reasons of immediate convenience, that even a little attention by a competent adviser with elementary instruction as to facts and a brief testing of general intelligence and special abilities may be of great value.²

¹ See EDITH O. MERCER, 'Some Occupational Attitudes of Girls', *Occup. Psych.*, 1940, 14, 20.

² For an account of quite recent developments in vocational guidance see *The Youth Employment Service*, by H. HIGGINBOTHAM (Methuen, 1951).

CHAPTER XXVIII

THE APPRECIATION OF BEAUTY AND AESTHETIC EDUCATION: I. NATURE AND VISUAL ART

Varied views as to the meaning of beauty. The psychologist who discusses the appreciation of beauty is faced with two difficulties at the outset. First, such diverse views have been taken by philosophers as to what is beauty. It has been defined as that which gives us 'stable pleasure', 'delight in mere contemplation', the '*expression of any feeling*', or 'that which is true to nature', and so on. To settle the philosophical disputes as to beauty is not the psychologist's task, though he may contribute a good deal to some of them.¹ We must be content to start with the assumption that most people regard as beautiful certain things – a view of a wood or mountain, a poem, a picture, a musical composition; or at least they love to look at or hear them. Starting with these facts, we can then try to find the psychological nature of the experience when a person is enjoying what is, at least for him, beautiful.

The second difficulty is that the most genuine, or at least the most intense aesthetic experiences, are so hard to express in language. Even one well practised in introspection, when asked to give his reasons for liking a picture, poem, or musical composition, may feel that, after picking out the most striking points there is still much in his experience which is elusive. Indeed, it is quite likely that unconscious associations or unconscious desires may have an important influence on his experience.

Art, sex, and phantasy. We may admit the great influence of

¹ Those who are interested in philosophical aesthetics will find a useful introduction in L. F. GARRICK'S *The Theory of Beauty* (London, 1911), and a profound analysis in S. ALEXANDER'S *Beauty and other forms of Value* (London, 1933).

unconscious elements without accepting Freud's view that the appreciation of beauty, or its creation by the artist, is simply the sublimation of the 'libido' (fundamentally sexual). The artist, as Freud says, can express his fantasies in the beautiful things he creates.¹ It may be that he is expressing things of which even he is not clearly conscious; and that the unconscious significance of symbols, forms, sounds, words, may have some effect on the appreciation of the work of art. But all that does not necessarily imply that the enjoyment, or creation of beauty, is essentially sexual in origin. As we saw in Chapter X, we must not confuse substitution with sublimation. We may be more disposed to revel in art because we are frustrated in real life. Poets and artists have more than hinted at this, and Wagner explicitly asserted: 'If we had life, we should have needed no art.' But this does not necessarily mean that the sex urge is itself deflected into art, and that there is nothing else involved in art. Nevertheless, we may certainly agree that one factor in the biological origin of the enjoyment of beauty was that involved in sexual selection, and in this not only form and colour but also movement and voice might be elements attracting admiration. Beyond that, as we saw in an earlier chapter, nature has evolved sensitivity and capacity for enjoyment (or pain) beyond what was essential for survival or efficiency; and the intense enjoyment of beauty (other than that seen in one's opposite sex) remains, so far as the mere psychologist is concerned, one of these mysterious developments.

Some general psychological marks of aesthetic experience. Let me first as an example try to describe briefly my experience in listening to a fine rendering of a Beethoven Symphony. First, my attention is riveted on the music, all thoughts of anything else being ruled out. There is a dominant feeling of delight, with occasional sombre moments at some passages. I know the composition well enough to be able to follow it with ease o apprehension. Yet the variety of changes are such as to prevent slackening of interest, and to hold me fascinated – entranced, as we say, most significantly. All thoughts of self or of everyday affairs are lost in thraldom to the music, in which there is often

¹ FREUD, *Introductory Lectures on Psycho-Analysis*, p. 314.

a suggestion of great power; sometimes the rhythm is so stimulating that my hands and head tend to move with it in sympathetic emphasis.

To a lover of music this still seems a cold and inadequate account of a unique and elusive experience. But it may serve to illustrate the points of our next paragraph.

There are some important things on which psychologists generally would agree about the experience of the 'enjoyment of beauty' or 'aesthetic appreciation'.¹ I will sketch them briefly and rather baldly here. They will become clearer, I hope, in our subsequent discussion and experimental studies.

(1) There is some stimulation of emotion or at least of some feeling.

(2) This feeling is usually pleasant to a high degree; most psychologists would agree that there is always at least a pleasurable element in it. Some maintain that pleasure is the very essence of aesthetic appreciation;² though of course a man may be so fatigued or 'out of mood' that he gets no enjoyment from a picture which he would say he 'knows' is a beautiful one.

(3) Yet pleasure and aesthetic enjoyment are not identical. We should hardly call the pleasurable sensations due to a satisfying meal 'beautiful'. Also in the contemplation of some picture or poem which we recognize as beautiful there may be a strong element of sadness.

(4) There is, however, no unique emotion which we can label *the* aesthetic emotion. The essential thing is rather a harmonious blend of feelings and a certain attitude of mind.

(5) Our attitude towards something beautiful is essentially 'disinterested'. In the moment of true aesthetic appreciation we are not thinking of ourselves, or of the cash value of the

¹ The word 'appreciation' has two meanings: it may indicate primarily enjoyment, or 'being sensitive to any delicate impression' (*Shorter Oxford Dictionary*); or it may imply an estimate of value, in our present connexion the estimate of beauty. In these three chapters I have in mind enjoyment unless the other meaning is clearly also involved. Some would maintain that full aesthetic enjoyment does also imply as a prerequisite a good judgement of beauty.

² Notably H. R. MARSHALL in his book *The Beautiful* (London, 1924).

object. The more complete our aesthetic appreciation is, the more our attention is concentrated on the object itself. We are, as the saying is, 'lost in admiration' of it.

(6) To hold our attention for more than a few moments there must be a certain degree of complexity in the object; and yet, to facilitate apprehension, there must be a unity and comprehensibility in the object; otherwise we might soon be involved in reasoning about the object which would destroy the purely aesthetic attitude. There must be, as one writer says, both 'stimulation and repose'.¹

As we saw in the chapter on Attention, some change and variety are necessary if attention is to be held. Too frequent repetition and familiarity may make even a pleasing tune boring, and it becomes 'hackneyed'. Some types of modern art are possibly due partly to an attempt to get away from the familiar and to hold attention through mere novelty; but that, of course, is not enough.

All the very general statements in the last paragraph are true of the aesthetic enjoyment of beauty in nature, or in pictures, music, or poetry. Yet each of these spheres has its own special peculiarities which we shall touch on shortly in these three chapters. Nor are these broad generalizations a complete description of aesthetic appreciation, which seems at present indeed probably beyond the profoundest psychologist or philosopher.

Furthermore, these general principles leave scope for great individual differences in the aesthetic enjoyment of the same beautiful object by different people, as we shall see in our experimental material. To that we shall turn directly, beginning with visual art; but first a word must be said about the appreciation of the beauty of nature.

The beauty of nature. Some philosophers, in writing of aesthetics, have excluded nature. But though there are certain added complexities in the appreciation of art (and some elements in our appreciation of nature, hardly present in that of art) we may, I think, regard the appreciation of natural beauty

¹ E. PUFFER in *The Psychology of Beauty* (New York and London, 1907).

as fundamentally of the same order.¹ The strong appeal of colour is at least one common element in the enjoyment of nature and of painting; so is the appeal of form and composition. We may admit that the true artist will always select from, and often try to improve on, nature. We may agree also that to see beauty in nature, as in artistic creations, we have to contribute something ourselves; as Wordsworth puts it, 'All the mighty world of eye and ear, both *what they half create*, and what perceive.' If, as Carlyle says, every man who reads a poem well is himself a poet, then as Carritt adds, 'Every man who sees a mountain well, is an artist' – or I should prefer to say, has *some* of the qualities of an artist.

For many the first appeal of beauty will come through nature. Indeed, Ruskin himself declared that his first real art work came through his love, not of art, but of mountains and sea.

The varying reactions to the beauty of nature may supply us with our first example of great individual differences in aesthetic responses. To Wordsworth as a boy in the Lake District, the beauty of nature made a profound appeal.

'The sounding cataract'

Haunted me like a passion: the tall rock,
 The mountain, and the deep and gloomy wood,
 Their colours and their forms, were then to me
 An appetite; a feeling and a love,
 That had no need of a remoter charm,
 By thought supplied, or any interest
 Unborrowed from the eye.'

But how many brought up in lovely country fail to appreciate its beauty, and try to escape even to a sordid town at the first chance. The delight practically all town children show at a day's excursion into the country cannot necessarily be attributed to a love of natural beauty. The novelty, the animals, the freedom to run about, the gathering of wild flowers, all have their strong appeal. There may be, no doubt, to many an

¹ A brief justification for the inclusion of nature in the discussion of aesthetics is given by E. F. CARRITT in *The Theory of Beauty*, pp. 34-44.

appeal by the beauty around them, as some indeed show by their wish at moments to 'stand and stare'.

Unfortunately, however, precise evidence as to a widespread appeal of the beauty of nature is only scanty. In an inquiry of mine among over 200 University graduates, about 63 per cent. reported that their interest in nature had increased during adolescence. Professor Olive Wheeler found rather lower figures for her students, but rather higher for 100 young workers.¹ Dr W. D. Wall found, among nearly 200 young people of fourteen to seventeen, that about 42 per cent. reported an increased interest since 13; 0 in 'Nature' – but that included gardening, science, and astronomy.² Experimental inquiries as to the appreciation of visual beauty have been confined to work with colours, lines, or pictures which can be shown in the laboratory. For accounts of the effects of nature on the human mind we have largely to rely on poets and artists – very exceptional men of course.

Childhood and natural beauty. That the appeal of natural beauty depends on something very fundamental in human nature is suggested by the fact that in some children at least an emotional response to natural beauty can occur as early as the age of four or five. Thus W. Stern reports that a girl of 4; 9 exclaimed, 'Just look how lovely the clouds look, sky blue, white and pink.' Stern's boy G., at 4; 1, when taken out of bed to look at the moon above the mountains said, in a tone of rapture, 'Oh, that is lovely, lovely. I say how lovely that is.' At another time he looked out of the window and said, 'Oh Mummy, how beautiful the trees in the garden look when the sun shines on them.'³ It may be thought that all this could be merely a repetition of words and attitudes suggested by parents. But Stern reports as follows as to his own boy:

'He admires beauties that others never see. This power is natural to him; he is brought up in the same surroundings as his sisters, but they are not so sensitive to these impres-

¹ Particulars of these inquiries as to adolescents are given later in Chapter XXIII.

² See his book, *The Nature of Child*, p. 13.

³ See W. STERN, *The Psychology of Early Childhood*, p. 364.

sions. Yesterday evening we called the children to come and have some music in the drawing room. The lowered blinds threw this into complete darkness, only relieved by the golden-red light of the lamp by the side of the piano. The sisters had come in and noticed nothing; G came a little later, stopped short at the door and said with admiration: "O how beautiful it looks, so dark and then the lamp." ¹

Stern adds that G found pleasure in natural phenomena before he did in works of art. My own children used the word 'pretty' in reference to flowers and pictures at least as early as three years. The girl Y at 2; 7 also spontaneously said to her mother, 'You are pretty,' and to her sister, 'Let me see your "pretty" frock'; so the word 'pretty' was not merely learned specifically in reference to flowers. That it was in some way generalized is shown also by the fact that at 2; 7 she was very decided in her preference for the pretty faces in Binet's well-known test with pairs of pretty and ugly faces, now usually assigned to the age of 4; 0. At 4; 6 Y said on seeing the sea, 'Oh, it makes me feel so happy,' adding after a pause, 'It makes me want to cry.' The boy G, at 7; 10, when we were walking on some hills, told us that the field with the sun on it gave him such a strange feeling; 'It fills my heart with joy' he said – and he was rather a taciturn and very reserved boy. It should be added that my children had I.Q.s of about 135 to 145 at these ages, so about 40 per cent. should be added to the above ages.

As we have seen, the appreciation of the beauty of nature decidedly increases in many during adolescence. Then, writes Stanley Hall, the more physical, animistic attractions of the child give place to deeper sentiment: and in flowers and trees are seen something like human attributes – modesty, gentleness, elegance; some are 'bold', 'pert', or 'jaunty'; others 'dainty', 'true', 'frail'.² Here we have a parallel to an attitude we shall find in reactions to single colours, to which we now turn.

Experiments with colours. There seems to be something innate

¹ *Op. cit.*, p. 963.

² S. HALL, *Psychol. of Adolescence*, Vol. 2, p. 206.

in the appeal of colour. Experiments have revealed that a marked preference for colours of the 'warm' end of the spectrum (red, orange, yellow) may be shown by a mere baby of three or four months, and an indifference to or dislike of violet.¹ One investigator found red still the most popular colour with children of about six or seven, after which blue was preferred.² Before this, of course, associations (sometimes unconscious) may begin to influence preferences; for example, associations of happy days under blue skies, or of green with fields and woods, and with adults we know that a change of fashion may after a time easily affect colour preferences. Sometimes an individual's particular experiences may become associated with a colour, and so determine his attitude, as when one of my subjects said he liked a colour because it was the colour of his political party, and another disliked one because it was the colour of a tie constantly worn by a teacher she greatly disliked. Such crude associations indicate that, at least for the moment, the subject was dropping to a low level of aesthetic judgement.

Important as associations may be, however, we must recall the great individual differences between persons in their response to colour, even when they have been brought up in the same environment. One will be 'thrilled' by the colour of a flower or merely by the tint of a wallpaper; another will hardly notice the colour and will be as contented in a room of drab grey or in a dull garden if neat, as he would be if he were surrounded by harmonious colour.

In experiments on the appreciation of colours Edward Bulloch found that *different aspects of colour* appealed strongly to different people.³ These aspects were as follow:

I. Objective aspect. Colours found pleasing because saturated, pure, bright; or displeasing because too thin, mixed, dull, foggy, and so on.

¹ C. W. VALENTINE, 'The Colour Perception and Colour Preferences of an Infant during its Fourth and Fifth Month,' *B.J.P.*, 1933, 6.

² W. H. WINSTON, 'Colour Preferences of Six- to Ten-year-olds,' *B.J.P.*, 3,

³ See 'The Perceptive Problem in the Aesthetic Appreciation of Single Colours,' *B.J.P.*, 2, p. 108.

II. Physiological aspect. A colour is found pleasing because stimulating, soothing, warming; or displeasing because dazzling, depressing, or because it 'makes one feel hot'. Here the attention is drawn towards the effect of the colour upon the subject himself.

III. Associative aspect. With this we are already familiar. Here the pleasingness of a colour is largely determined by the things of which it reminds the subject. Some associations, such as that of the teacher's tie, are very personal, and may be recognized by the individual himself as being bad reasons for judging a colour. Other associations are very common – as of green with foliage. But the important thing, from an aesthetic point of view, is the extent to which associations so blend with the beautiful object that they do not affect the concentration of attention on it. This will clearly be the case especially when the associated *idea* is quite unconscious, though the *feelings* connected with it may be revived, as when a bright blue cheers us because of happy days in the sun, though we do not at the moment think of them. The associated feelings are, as it were, 'fused' with the object as Bullough puts it.

IV. Character aspect. Colours are sometimes liked because jovial, fearless, energetic, truthful, or sympathetic; or disliked because stubborn, treacherous, too aggressive, and so forth. In these judgements we find the colour regarded and spoken of almost as if it were a person. A *character* is attributed to it.

Each subject gave some judgements of each of the above types, but some gave considerably more of one type than of the others. Persons of the 'objective' type were rather intellectual and critical. The 'character' type were few in number but the most appreciative. Bullough regarded the character type as the highest in aesthetic development, and the objective as the second; the others he regarded as lower because they were not judging the colour as beautiful in itself but because of the effects on themselves or of something associated with it.

Attitude to colour affected by its meaning. In some cases in my own experiments I found the attitude to colour might be

determined by its meaning. Thus one rather dirty green was disliked at first by a subject; then she thought of it as the colour of a faded autumn leaf, and at once she found it pleasing.¹ Similarly, the significance of a particular colour in a picture may greatly affect its normal value for us; though if a picture is largely of a colour we dislike it is likely to be spoilt somewhat for us.

Also a special liking for (or disliking of) a colour may affect our attention in looking at a picture. Thus in Rossetti's picture of Dante and Beatrice I found my attention primarily drawn, not to the main figures of Dante or of Beatrice, but to the friend of Beatrice, because her robes were of a beautiful colour I especially loved.²

The beauty of form. One of the most interesting and surprising things which experiments have revealed is the fact that people can find themselves markedly pleased or displeased even with simple lines and curves, often much to their own astonishment. In a lengthy series of experiments with straight lines, curves, circles, and ellipse it was found that among eight persons only one found all the lines and figures indifferent. Others had strong preferences. One of the persons based his judgements entirely on associations.³

The breadth of the lines affected the judgement, the broad lines being generally preferred. One subject I tested with a thin line which was found indifferent: the line was then thickened somewhat, and was found pleasing, because 'more powerful'; the first line, my subject remarked, looked too much like a minus sign. The line was further thickened, and was found

¹ Particulars of my own experiments, and many others, with colours will be found in my book, *The Experimental Psychology of Beauty*, to be published by Methuen in 1920.

² Recently in an art gallery an expert commented on the attractiveness of the blue and brown of the garment in a famous portrait as one of the two main points of attraction, whereas I found the blue really distasteful, and this decreased my liking for the picture. It should be a fact that, apart from definite colour blindness, people vary widely in their actual likes and dislikes they experience in looking at the same colour. See the article by Dr MARY COLLINS, *B.J.P.*, 1929, 19.

³ See L. J. MARSH, 'An Experimental Study of Fechner's Principles', *Psych. Review*, 1906, 13. I have given a brief summary of these in *The Experimental Psychology of Beauty* mentioned above.

less pleasing, and eventually displeasing, 'clumsy', the subject remarking that I need not go on widening it any more, as she was sure she would not like it again. However, I continued to widen the line, and suddenly, when the line was over quarter of an inch thick, my subject discovered that it was pleasing again, because it was beginning to look, for a moment, like a rectangle, though perhaps again appearing momentarily as a line.

Similarly, a line such as / was found to be displeasing when regarded as a bad vertical, but pleasing when regarded as a horizontal which is raising itself to the vertical.

The general preference for curves over straight lines may be something very fundamental and connected with the appeal of curves in the human form;¹ but probably another element enters in. Suppose we consider a curve which suddenly becomes broken, thus:



In an early chapter we saw that mental activity is pleasant in so far as it is successful, and in aesthetic appreciation generally we experience pleasure when the attention process is facilitated by the unity of the object. The above curve is displeasing partly because, having set out to be a curve, it ceases to follow this plan, and our attention is thwarted and disappointed.

As with colours, we may expect that the appeal of individual curves or shapes will be profoundly modified in pictures by their meaning and relation to the whole. Yet the fact that the appreciations (a) of individual shapes, and (b) of complex pictures are not entirely unconnected is indicated by an investigation by H. J. Eysenck in which twelve curves of mathematical functions were ranked in order of preference by eighteen

¹ W. A. McFARROW concluded that boys tend to prefer curves and circles (supposed to be symbols of feminine form), while girls prefer straight lines and triangles. The differences became more marked after 12; o. See *B.J.P.*, 1954, 45.

persons of varied types (clerks, painters, students, teachers, etc.). They also arranged in order their preferences of sets of twelve coloured landscapes, thirty-two reproductions of portrait paintings, thirty-two reproductions of statues, fifteen coloured photographs of flowers, and thirteen other sets of aesthetic objects. Eysenck found that the general factor of aesthetic taste (not identifiable with 'g'), appeared in the judgements of pure curves to a higher degree than it did in judgements even on statues or flowers.¹

In an earlier chapter we saw that some persons (especially women) remember colours better than shapes; others (especially men) remember shapes more easily. No doubt interests and experience have an influence here; but that there is something fundamental in this difference in individuals is strongly suggested by some experiments with exposures, for only one-fiftieth of a second, on screens on which appeared various types of shapes and colours. They showed that the attention of some persons was much more strongly attracted by colour, that of others (especially men) by shape, though most were of a mixed type.²

Fundamental differences between individuals as to the degrees to which they are influenced relatively by pure form or pure colour, may account for the fact that some persons take as great a delight in statuary or in black-and-white drawings as they do in coloured pictures, while others find colour essential for their highest enjoyment. Again, in the appreciation of a coloured picture, the extent to which there is balance and

¹ See 'The General Factor in Aesthetic Judgements', *B.J.P.*, 1940, **31**, p. 97. The fact that there is a general factor in aesthetic appreciation had already been shown by Burt in investigations with the collaboration of Miss Pelling at the National Institute of Industrial Psychology. For a brief account, see article by HEATHER DEWAR, *B.J.P.*, **8**, pp. 32, 33. Miss Dewar, in the same article, reports that her experiments indicate a point to a 'single general factor as mainly responsible for the orders of preference given'—see pp. 47, 48. We shall refer to this general factor again later, and find that it appears also in literary appreciation.

² See O. A. OESTER, 'Experiments on the Abstraction of Form and Colour', *B.J.P.*, 1912, **22**, pp. 200 and 237. The 'colour' or 'shape' persons, when tested with Rorschach's coloured blot test, gave 'large amount of interpretations' based on colour, and 'feeling' played a great part in their interpretations (p. 323).

structural harmony may be less important for some persons, provided the colours and colour harmonies are pleasing, though we may regard the highest type of aesthetic appreciation that in which both colour and form and composition are all of great importance.

Merely mechanical balance is, of course, not important in a picture. Indeed, strict symmetry is displeasing to the cultivated taste.¹ A small object of special interest may 'balance' a much larger one of lesser significance. 'Balance' indeed is hardly the right word in reference to the subtle influences of interest, and of stimulation and satisfaction of attention which result from that ideal composition in which as Ruskin says, we find 'the help of everything in the picture by everything else'.

Types of judgements upon pictures. The four types of judgements found with colours also appeared in experiments I did on fifty adults (mostly students) with thirty-six reproductions of pictures, some famous, some very poor. But pictures, being much more complex objects, are, of course, more likely than bare colours to produce a genuine aesthetic experience, and there are other kinds of judgements, some of which do not seem so readily classifiable as of the four other types. In particular there were a good number I labelled 'expression', though they often came near to the 'character' type. I should mention that a number of my subjects confessed to having very little interest in pictures, some to being quite bored by them.

Some of the types of judgement may be exemplified by comments on a picture of a wintry scene of a village in which a few scattered folk were fighting against wind and snow in the dusk of twilight.

Subjective. 'Has a depressing effect'; 'seems to strike a chill through one'. 'The attitude of the old man makes one want to draw up the shoulders as though one felt the cold wind blowing the snow about.' To none of the persons giving these judgements was the picture pleasing.

Crude association judgements were: 'Pleasant because it

¹ See ERIN PELLER'S *Psychology of Beauty*. I have given an account of her experiments in the *Experimental Psychology of Beauty* (Methuen, 1960).

suggests skating and snowballing'; 'Suggests Bleak House'. 'Objective' judgements were that the reproduction was 'not clear' or 'dull' in colouring.

Character or expression type. The storm appeared as itself 'a glorious thing', or the picture seemed to express a symbol of man as the victim of environment. The 'character' type also appeared in such remarks on a seascape, as, 'The big waves swelling impotently, striving for something and never attaining it'; or, on a landscape, 'The nodding flowers give a merry note as contrasted with the sombre majesty of the hills.'

Closely allied with this tendency to read 'character' into a picture, or parts of it, is the mental process which has been called *Empathy* – feeling into a thing; for example, when we regard the waves as *striving* to break down the rocky cliff. 'Imagination,' wrote Ruskin, 'rejoicing in its own life, puts gesture into clouds and joy into waves and voices into rocks.'

The artist's skill. The experts and even others are very apt, in commenting on a picture, to refer to the artist's skill in one way or another. The legitimacy of this consciousness of the artist's skill in the moment of appreciation is a complex problem. Certainly excellence of expression is one element in beauty. Nor would any aesthetician dispute the view that the beauty of a picture does not depend merely on the beauty of the individual things represented. Indeed, most would say that the picture of an ugly man may itself be beautiful.

The consciousness of the excellence of a picture merely as a representation, apart from the pleasingness of the things represented, tends to make one speak, occasionally at least, of the excellence of the artist's work. This rarely occurs in children before the age of twelve or fourteen, unless they have had special training; and it is noticeable that in some adults this point of view is also lacking, or at least it has little influence in determining their appreciation of pictures. The difference of their attitude from that of others was well brought out in my experiments. Consider, for example, the judgements on Rembrandt's portrait of himself as an officer. Many found the pic-

ture highly pleasing, and spoke of the excellence of the portraiture as such: 'character emanates from every line', 'there is a suggestion of strength, the man seems alive', 'the artist has put force of character and much expression into the portrait', and so on. Some of these subjects do not like the face of the man *as a man*, but their appreciation of the excellent way in which he is depicted seems to overcome this.

There is a second group of subjects, represented by the following comments: 'As a work of art, lovely, but the face does not attract. There are signs of weakness about the mouth, and the eyes look peevish. On the whole, the picture is displeasing.' 'A masterpiece in portrait-painting, the colouring, etc., being excellent; but it calls up the idea of dark and gloomy times when such men were a terror to the country. The picture is displeasing on the whole.'

To a third group of subjects the excellence of the portraiture does not seem to occur. Their judgement is almost entirely determined by their liking, or more often dislike, of the man as represented. 'The face looks crueler the longer I look at it'; 'pleasing features, such as the dress, are counteracted by the haughty expression'; 'the pucker in the brow is irritating, and the features are heavy'. This attitude is obviously nearer the naive realism of the child. The first group represents a more developed artistic attitude.

I do not wish to imply that the thought of the artist's skill should predominate. From the point of view of pure aesthetic enjoyment it may be regarded as a disturbing element which prevents the observer 'losing himself' completely in the picture itself. Yet the thought of such artistic skill hovers close where there is a keen appreciation of the picture *as a picture* and not merely as a suggestor of agreeable objects, as it generally is to a young child. Especially in speaking of the picture, after just enjoying it, does the thought tend to occur. In art criticism, of course, references to this or that aspect of the excellence of representation and of the artist's skill are frequent. Yet the wise critic recognizes that this is only an introduction to true appreciation. 'He [the critic] teaches the onlooker to read pictures and then discreetly withdraws, leaving the picture to do its

own work'.¹ We shall have more to say on this topic in the section on aesthetic education.

When aesthetic appreciation is well cultivated such awareness of the skill and fineness of expression may become fused with our concentrated apprehension of the picture: the basis and origin of that aspect of our enjoyment of the expression is for the time at least not thought of: it is an unconscious influence. In a sense the skill itself seems to be *objectified* in the beautiful thing represented.

Agreement among differences. We have already seen ample reasons for individual differences in the appreciation of pictures – varying sensitivity to colours and shapes, conscious and unconscious associations, appreciation of skill through knowledge of technique, etc. These and other factors produce differences of appreciation even among people of the same environment and general education. These differences appear in spite of the great influence of the tradition and custom of the civilization and of the period, and even of the particular country in which the individual lives – witness the difference between the art of China or India and of Western Europe; and the difference between the attitude towards impressionist art in its early years and that, in some quarters at least, today. Even artists and expert art-critics sometimes differ markedly in their judgements of pictures. Thus one great French artist (Manet) said of another (Renoir), ‘Advise the poor fellow to give up any thought of painting.’ Cézanne said to Gauguin, ‘Honestly, your painting is mad.’²

Yet when it comes to discriminating between really good and very bad pictures, we find in spite of all the individual differences, a substantial amount of agreement as to what are really good or bad pictures, as was shown by Burt in his experiments with fifty picture postcards.

‘They included [he writes] reproductions from classical masters, second-rate pictures by second-rate painters, every

¹ PROFESSOR T. BODKIN, in his most readable book, *The Approach to Painting* (New edit. Fontana Books, 1954), p. 63.

² T. BODKIN, *op. cit.*, pp. 21, 22.

variety and type down to the crudest and the most flashy birthday-card that I could find at a paper-shop in the slums. The test consisted in arranging the fifty cards in order of preference.'

The competent artists and art critics who did the test were in close agreement; their orders correlated to the extent of 0·9.

'All that happened was that the Royal Academician would put a landscape by Leader rather near the top, whereas the modernist might put it tenth or fifteenth – but well above the commercial horrors of the stationer's shop. Some put Raphael first, and the primitives fourth or fifth; others put the primitives first, yet Raphael was never far down.'¹

It is when we come to the choice within a certain degree of excellence that the individual differences become marked – just as special abilities have a dominant influence in the order of merit in a test when 'g' is about equal in the individuals tested. For example, the impressionists are possibly more colour-dominated than most, and some modernists are more readily bored by familiarity and crave for change and novelty.

The child's appreciation of pictures. We have agreed that even one well practised in introspection may find it impossible to give a complete account of the reasons why he likes a picture, and this is, of course, still more true of children. Yet we can glean something from their accounts. A number of observers agree that when young children, from six or seven to nine or ten years of age, are asked why they like pictures, they refer entirely to the *contents* of the pictures – that is, the individual objects represented in them. Thus one of my little subjects, an intelligent girl of nine, when asked why she liked a certain landscape, replied: 'Because you see all the flowers and all the houses and the sea and the little girl with the basket.' Again, a picture of a cavalier was liked 'because he's got on a pretty hat, and pretty curly hair, and earings, and a lovely black jacket'.

I had a number of different objects painted upon a sheet of

¹ See the section dealing with Art in the book *How the Mind Works*, edited by C. BURT.

paper, such as a large flower, a small bird, a boy with a ship, etc., all scattered about the paper without any connexion between the various objects. Yet apparently it was regarded as a picture by the little children of six or seven, to whom I showed it among picture postcards of the same size. Its lack of unity did not seem to strike them as a fault. It was a 'nice picture' because there was 'a boat', or a 'nice flower', or a 'little bird' on it.¹

It is interesting to recall here the results gained with Binet's test of 'Describing a Picture'. When shown a picture of a poor man and boy dragging a cart with their household possessions on it, and asked to tell all about it, most children under 6 ; o simply enumerated the objects, at 9 ; o they say what people are doing, and only at 11 ; o or 12 ; o do replies go beyond what is actually visible in the picture, and mention the situation or emotion it suggests.²

That the apprehension of a complex picture as a unity is related to intelligence and is not easy for the little child, is understandable when we reflect that the realization of the unity depends on the grasp of relations between the parts, and that, as we saw, is essentially dependent on general intelligence. Some form of unity in a picture is of course a quality essential for its aesthetic value.

Such unity may be partly a question of colour combination and partly, as we have seen, of balance and symmetry. But the most complex unity involves also unity of meaning and purpose, possible, indeed often more evident, in the presence of contrast.

This necessity of unity in a picture is based upon the facilitation of attention to which we have already referred. If there is to be full aesthetic enjoyment in the contemplation of a picture, attention must not be frustrated by having entirely disconnected items thrust before it.

Realism is a marked characteristic of the attitude of children.

¹ Some modernist pictures seem to resemble such a collection of objects, but presumably there is some connexion between the individual objects in the artist's mind - conscious or unconscious, or they may be held together by the 'composition' - the pattern of the relations between the shapes.

² See BURT, *Mental and Scholastic Tests*, 2nd edit., 1947, p. 27.

I repeatedly had as a reason for liking a picture the statement that it was 'just like' a baby or a horse, and for dislike that it was 'not like' a real man or sunset. One picture, including a woman in scanty robes, was disliked because she was 'not dressed properly'. Reality was also one of the chief factors referred to in the overwhelming preferences of 100 Secondary School boys of 11; 0 and of 100 older boys (ages twelve to sixteen) for Constable's *Bridge over the Stour* as against the modernist Van Gogh's *Landscape with a Bridge*.¹ With four other pairs of one modern and one old masters' pictures (each pair dealing with similar subjects) there were also very large majorities against the modern pictures. As the authors point out, we must not conclude that because children's drawings are often incompletely realistic they necessarily prefer the same kind of expression in pictures, though they may still greatly like their own efforts. Very little children, indeed, sometimes draw something first and decide what it is meant to be afterwards.

Closely allied with the love of realism is the liking for extreme *clearness* in a picture. I had repeated criticisms from children that 'you can't see it clearly'. Littlejohns and Needham report the same of their young children of eleven, *op. cit.* Miss Maragaret Bulley presented to over 2,000 children in elementary schools, continuation schools, and clubs, four pairs of contrasted illustrations — two of the Madonna and Child, two landscapes with trees, two animal studies with landscape backgrounds, and two decorative designs of peacocks. Well-known art experts were unanimous in their preferences in each pair. With the children, the bad, the sentimental, the *photographic*, were preferred.²

The subject matter of the picture also has a great influence with children. Young children, as we have just seen, are attracted by individual objects which they like. Even older ones and adults are often greatly influenced by the main subjects.

¹ *The Training of Taste in the Arts and Crafts*, by J. LITTLEJOHNS and A. NEEDHAM (1933), p. 48.

² 'An Enquiry into the Aesthetic Judgements of Children', *B.J.E.P.*, 4, p. 172.

Burt submitted the same fifty pictures he used with his adults to children of school age. 'Boys of ten,' he writes, 'would put the horse-guard, the battle scene, or the railway engine very near the top; while girls would single out the kitten or the rose-buds.'¹

Children compared with adults. It must not be assumed that any clear dividing line can be drawn between children and adults in the appreciation of pictures. All the types of comments found especially often among children appear also among some adults — the dominance of particular subject matter, and interest in particular objects, the influence of crude associations, the demand for precise realism, and so on.

Apart from the important effects of special early training (to which we shall refer shortly), there are individual differences which bring some young children, as Burt found, beyond the level of many adults — perhaps their greater general intelligence, and sensitivity to colours or form, or their endowment with the general element in 'taste', if there is a mental reality corresponding to the general factor found by Burt and his collaborators or students, or by their freedom from later spoiling through convention and ugly surroundings, as Burt suggests.

Certainly mere age (beyond the full maturing of 'g') does not ensure a rise in taste. Miss Bulley found the average score of thirty women in English jails rather below that of the boys and girls of the age of ten or under; and the average score of the very young children was better than that of some of the older groups.

The special immaturity of children, or the defects due to poor aesthetic environment, may be brought out by tests with certain types of pictures or objects but not with others. Thus in the tests by Miss Bulley with four pairs of illustrations just referred to, she found that the children did not even score the 50 per cent. they could have done by mere guesswork. They

¹ *How the Mind Works.* The special testing for animal pictures among children of three to six years is also shown in G. H. Thorne's article 'Colour and Picture Choices of Young Children', *Journal of Genetic Psychology*, *vol. b. 49*, p. 427. Unfortunately it does not make clear the relative influence of colour on the choice of these children.

actually preferred the bad. Yet Burt, in his tests with fifty post-cards, found that on the whole the orders of choice of most of the children gave positive correlations with those of the experts. The explanation, I think, is that Burt included a very wide range of exceedingly bad and supremely excellent pictures, and these gave scope for even the minimum of aesthetic taste to reveal itself.

The effect of repeatedly seeing a picture. One investigator showed fifty pictures to five persons for six days in succession and again after one month and three months. The results suggest that a good picture is likely to become more pleasing with repetition and careful study.¹ In another experiment three pairs of pictures were shown to several classes of a London Central School, the younger boys being eleven years, and older ones fourteen to fifteen years old. The six pictures were two landscapes, two with horses and figures, and two showing agricultural labourers at work. One of each pair was a 'good' one, the other being brightly coloured with a strong sentimental appeal. The boys were asked to examine the pictures carefully and then state which one of each pair they preferred. They were then told that they would be given an opportunity of seeing all the pictures several times a week for about six weeks. If, later, they felt that their first choice was not the best, after all, they were quite free to reverse their decision, giving reasons.²

The results showed that Hobbema's *Landscape with Water Mill* gained greatly with younger and older boys, Clausen's *The Mowers* gained only with the older boys, while Morland's *Inside of a Stable* failed to improve with either group, chiefly because it was 'not clear enough', the fine contrast of light and shade in the dark stable not making sufficient appeal.

Experiments with modern pictures. As I could find no records of experiments with highly modern art, I carried out a series myself, choosing as subjects about a score of young people (ages eighteen to twenty) unlikely to be permanently fixed in their tastes, and not specialists in visual art, and yet presumably with aesthetic responsiveness above the average, as they were

¹ See my *Experiment! Psychology of Beauty* (Methuen, 1960), for details.

² LITTLEJOHN and NEEDHAM, *op. cit.*, p. 28.

students training for the teaching of music. They volunteered to do the experiments, for which I used about a score of pictures including cubist pictures of Picasso, and merely geometrical structures (e.g., a Mondrian). As I have given a detailed account of the results in my *Experimental Psychology of Beauty*,¹ I will only mention here some main findings.

None of the students found any of the pictures as a whole beautiful (except in one or two judgements), but several found beauty in the colours or in the form and design. On the other hand, all the students found some of the pictures very *interesting*. It was the ideas suggested by the pictures which were the main appeal in such cases. Most of the pictures were violently criticized by a few. Some were found very amusing.

It would be interesting to have reports of the reactions of children to modernistic pictures. In their own early drawings children often produce something resembling some modern paintings. But these have been attributed to the child's 'own limitations', though they seem 'to modern artists to be often in advance of the preferences of the adult public'.²

The development of teaching of design in many schools might, however, reveal itself in the appreciation of some forms of abstract art, such as the geometrical designs of Mondrian's referred to above.

The influence of environment and special training. We have already mentioned the great influence of environment shown by the varying views as to what is beautiful, held in different countries, ages, and civilizations. Clearly aesthetic taste is guided, and for most persons largely determined by their immediate environment, by merely seeing constantly the things around them; it is largely a matter of familiarity and suggestion. Nor, I think, would anyone who, like myself, began to take an interest in good pictures only well after childhood doubt that the mere looking at masterpieces can modify one's taste and greatly increase one's enjoyment of pictorial art. The same principles one would expect to apply to taste in respect to pottery, furniture, jewellery, and other objects of everyday life.

¹ To be published by Methuen in 1960.

² Board of Education Report on *The Primary School* (1931), p. 46.

And here we have some evidence of the effect home environment and specific training can have in cultivating taste. After a broadcast talk on 'Psychology and Art', Burt collaborated with Miss Bulley in arranging a test of aesthetic preferences. They used nine pairs of illustrations, one pair of each of the following: bookcases, armchairs, coffee-pots, pieces of jewellery, embroidery, and so on. Six well-known art experts were asked to say which of each pair had the greater aesthetic value, and they were practically unanimous. People were asked to say which of each pair they preferred. For the adult part of the inquiry the illustrations were printed in *The Listener*.¹ From children Miss Bulley obtained about 4,000 records. The most relevant results for our present topic were the following:

- (1) The average of all boys and girls was below that of even labourers and servants, and even below what would have been scored by mere guesswork – only four out of nine 'right'.
- (2) The scores of a girls' Grammar School in the Black Country, where there was special art training, rose more rapidly at fifteen and sixteen than did those of other Grammar Schools.
- (3) The scores of three private schools, with girls coming from homes where a high level of taste was to be expected, were at fourteen to sixteen about the average level even of University men and women.² The numbers of these last groups were small (fifty-five in all, for ages fourteen, fifteen, and sixteen), but the results are at least worth noting as some evidence bearing on our next paragraph.

Can aesthetic appreciation be trained? An eminent professor of English literature once said that you can no more teach anyone to appreciate beauty in literature than you can teach a young man to fall in love. The same challenge might be made in reference to visual art and music. Now it is not the business of the psychologist to set forth in detail methods of aesthetic

¹ An account by Burt of the results obtained with adults will be found in Appendix II of Miss M. BULLEY's book, *Have You Good Taste*, where the illustrations are reproduced.

² See Graph I on p. 165 of Miss BULLEY's article.

education; but it is our concern to point out how our findings on the process of aesthetic appreciation bear on the possibility of developing it.

Beginning with the above challenge we may point out that a considerable influence on the young man's falling in love may be had by those who are able to bring him into this or that type of feminine society. As we have already remarked, the standard of what is regarded as beautiful is apt to be set largely, first, by the general environment of the given country and period; and secondly, by the more immediate influences of home, school, and the circle of friends. The merely looking repeatedly at good pictures or beautifully made objects may, for some people, be enough to develop their interest in these, and to raise their standard of taste, consciously or unconsciously.

Whether such a new standard is in actuality a better one, whether the pictures or objects now admired are 'objectively' better, it is not for the psychologist to decide. We may be content to accept the idea that it is desirable that the general taste of the community should be so widely cultivated that at least people will be spared the mental pain of seeing ugly things around. Secondly, we may assume the desirability of increasing the amount of aesthetic enjoyment and interest.

Let us now consider how far any of our psychological findings put a limit to the possibilities of training in the appreciation of art, or guide us as to its best procedure. Glancing back at this present chapter from the beginning we may recall the following points:

(1) The probability of innate differences in sensitivity to the beauty of colour and form.

(2) The influence of familiarity on aesthetic attitudes; and in particular the modifying influence of merely looking repeatedly at good pictures.

(3) The apprehension of a picture as a unity and an expression of feeling, or character, as an essential thing for true aesthetic appreciation.

(4) The momentary interference by intellectual analysis of various qualities, with the essence of the true aesthetic attitude.

Individual differences in capacity for appreciation. As stated above, Stern remarked on the great difference in the sensitivity to beauty in nature between his children at the age of four, and I can confirm that from observations on my own children.

We have also seen reasons to believe that there are individual differences in sensitivity to colour and form. Everyday observation provides us with further evidence that great individual differences in taste may remain in spite of similar environmental influences. Consider, for example, women's dress. Within the same social circle, or even within the same family, mixing with the same society, reading the same women's fashion papers, we find one woman who is unerring in her selection of colours or design, another who rarely succeeds in looking right. We even find some clerks or factory girls, living in the poorest districts, with only their own observations of dresses in shops or the films or twopenny weeklies to guide them, who, in spite of very limited means, reveal in their own dress a taste greatly surpassing that of some wealthy women who have the advantage of far wider choice and the advice of expert modistes. Or again, one girl is always neat and has a good idea of line, but is content with drab clothes or colours that do not suit her; while her sister has an eye for colour, but is content to wear clothes that hang round her like a sack. Among men one brother will be so sensitive to balance and design that even the patchiness of a dinner-table — things crowded here or gaps there — will distress him; to another, form and design signify nothing, and he tolerates for weeks even a picture hanging askew on his bedroom wall.

As to the appreciation of the beauty of nature, we know that many may live in a lovely part like the Lake District, and yet fail to appreciate its beauties. Admittedly we do not yet know the extent to which latent capacities for the enjoyment of beauty of all forms may fail to develop because of unsuitable environment or lack of encouragement and training. I am only anxious to emphasize that we cannot assume that all, or even most, persons would come to appreciate good pictures or other examples of visual art if they had the appropriate education. On the other hand, we must not assume that a child or youth

is incapable of such appreciation until he has had fair opportunity. What, then, can be done?

Possibilities in aesthetic education. First, we can seek to bring young people into touch with beauty in order at least to give any innate capacities a chance for development. Everyday observation is sufficient to show us that this, in many cases, will have due effect. We have seen specific evidence too in reference to the increased liking for good pictures which follows greater familiarity with them.

We must consider next the possible influence of wise suggestion. We have already seen that a slight change of attitude or approach to a colour or picture can result in the enjoyment of its beauty instead of a merely critical and antagonistic attitude. The aesthetic attitude is often very delicately balanced, so that it may be tilted one way or the other. The genuine enthusiasm of a teacher for the beauty of a wood or mountain, or of some picture, may be to some extent communicated to the pupil (by the process of sympathetic induction of emotion discussed in Chapter VI); but more certain than that in its effect is the calling the attention of the child or youth to the possibility of beauty in natural or manufactured objects. To many, a chair or teapot will continue to be simply a thing to be used. In such objects the beauty of simplicity is something to which it is often necessary to call attention; again, a mountain or a river may be regarded merely as things to be climbed or crossed or fished in, until the aesthetic aspect is suggested. We cannot force appreciation, but suggestion can at least show the mind what to look out for, and we can thus provide at least an opportunity for it to work upon the mind.

In all this, we must, of course, bear in mind the stage of development of the child. To a large extent at least, pictures must be presented to him which, at his stage, appeal to him most, but with a constant tendency to lead him on to the more beautiful and more complex works.

The *active participation in drawing or painting* may also contribute to aesthetic appreciation. Certainly it makes one realize more fully the skill of the genuine artist and, as we have seen, that may be a supplementary help, if it is not too prominent in

the mind. More than that, however, the attempt to paint from nature leads to more detailed observation which at least gives a more continuous interest and greater opportunity for objects of beauty to have their effect on us. I have found personally that the attempt to learn pastel drawing even late in life led to a more frequent gazing at the clouds or trees on a country walk, and much more careful observation of their forms and colours.

Little children usually love to draw and paint. As we saw in an earlier chapter, there are adequate reasons for such activities apart from their possible contribution to aesthetic education; but clearly they would also give many opportunities for a training as to colour harmonies and form and arrangement, which should bear fruit later in the appreciation of visual art.¹ The child's own attempts at drawing and painting, however, must at some time be followed by opportunities of seeing first-rate artistic works; and in connexion with both some critical discussion may help in the development of taste.²

Knowledge about art. The general interest in pictures can be increased by knowing something about the artists, their methods and ideals, the succession of the various 'schools', and so on. But 'knowledge about' is not the same as aesthetic appreciation proper; it is only a supplement. If made an end in itself, for example as a preparation for an examination in the history of art, it may be largely sterile, so far as the essential enjoyment of beauty is concerned. On the other hand, we cannot remain for long on the level of intense emotional appreciation; and the associated interests in the artist's individual technique, or the connexion of his own life with his art work, or his relation to other artists, all these will permit the mind, without turning the attention from the picture altogether, to play about it, have a little change, and then return to the purely aesthetic emotional experience. Only 'aesthetic extremists struggle to hold us back from the subsidiary, casual delights which cluster about the core of all fine pictures. They forbid us

¹ A stimulating book on this subject is DR HILDA OLDHAM's *Child Expression in Colour and Form*.

² See, for example, the sample lessons at the end of the book by LITTLE-JOHNS and NEEDHAM, quoted above. For a general discussion of art education and psychology see E. A. PEEL, *B.J.E.P.*, 1954, 24.

to savour the host of associated historical or social interests which all such pictures evoke. They fear that if we dally on the outskirts of a picture we will never storm the citadel where the chief treasure lies enclosed.' So wrote one whose main life work has been the study of art, the exposition of its history and of the technique of the great painters. Yet in the final resort he agrees that, 'A cultivated appreciation of good technique is a poor substitute for the quick, instinctive response which we should make to the call, however faint or indistinct, of genius.'¹

There is indeed the danger that some may become so engrossed in the historical and technical details, as to be deflected from pure enjoyment by such intellectual pursuits. One intimate friend of mine was a leading authority on engravings of certain periods. His knowledge was great and precise; but he looked at pictures in a cold and critical way that indicated little profound enjoyment. His interest was chiefly in dates and individual techniques. As Professor Bodkin writes:

'While philosophers, painters, and critics are busy thrusting and parrying, they forgo the enjoyment of more substantial pleasures. Devoted incessantly to warfare on behalf of the Muses, to proclaiming and explaining their merits, they are left with little leisure in which to enjoy the company of those lovely ladies. Undoubtedly, to know the Muses is to love them. But the road from knowledge to love is far longer and less pleasant to travel than is the road from love to knowledge.'

¹ T. BODKIN, *The Approach to Painting*, pp. 68 and 55.

CHAPTER XXIX

THE APPRECIATION OF BEAUTY AND AESTHETIC EDUCATION: II. MUSIC

Writers on music – philosophers, musicians, and critics – have variously described it as the ‘language of the emotions’; the ‘objectification of the will’, or as developed ultimately from emotional speech. Some have emphasized especially formal beauty in music, others its expression of emotion. As so often in aesthetics, such generalizations are each incomplete, though each contains an element of truth.

For our present purposes, with our thoughts on the mental experiences while enjoying music, we may begin with those general marks of aesthetic appreciation listed at the beginning of our last chapter (pp. 421, 2). All these seem to be true of our experience in listening to good music, and are exemplified in the description I gave of my own experience in listening to a Beethoven Symphony (p. 420).

In the psychology of musical appreciation we find many parallels to that of the appreciation of visual art, allowing for the differences of elements – sounds instead of colour, and rhythmic forms of continuous successive sound impressions instead of balance or contrasts in simultaneous visual impressions. Certainly we find also great individual differences among people in their attitudes to music, as we did with pictures and nature, and with these we may begin.

Individual differences in the enjoyment of music. The most striking fact here is that some people seem to have no enjoyment of music at all. They may live in homes where good music is often heard on the wireless, yet they never come to love music, unless we include under that a song liked for the words and sentiment, or a jazz tune liked as good to dance to. They may even be intelligent and educated people; even Swinburne (himself a remarkably ‘musical’ poet) said music made no appeal to him.

The reasons for such indifference are still obscure. It probably depends partly on innate peculiarities – lack of emotional response to musical tones or to rhythm, sometimes lack of sufficient 'g', or weakness in some specific abilities required to grasp the structure of musical harmonies and phrases; or in many cases it may be due to not hearing good music while young and later not being plastic enough to develop the required capacity for enjoyment. These points we shall touch on again later. For the moment I am concerned with different impressions received while enjoying music; perhaps we should have headed this paragraph 'Differences in the *interpretation* of music', but that has a special meaning for technicians.

That the same music can 'mean' different things or express very different emotions to different people has been clearly shown by experiment. One investigator arranged a concert at which well-known musicians played good music to the audience of thirty people invited to take part in the experiment. None were professional musicians, though half of them had learned some musical instrument. About each rendering they were asked some question – as to imagery or ideas or emotions suggested.¹

Beethoven's *Prelude in F Minor* was found by some to express 'deep gloom'; others found it 'bright'. About half said it expressed 'intense' energy; but a number referred to its 'mild' energy. Sample comments on Beethoven's '*Pastoral*' *Sonata* were:

M. (Man) – 'Puzzles me.
Suggests something
slightly frivolous.'

H. (Woman) – 'The joyful
uplifting of an oppressed
soul that feels itself re-
leased from depths of
anguish through faith in a
kind, heavenly Father.'

J. (Man) – 'Gave me a feel-
ing of light-heartedness.'

F. (Woman) – 'A vague ex-
pression of regret.'

Possibly these great variations can be explained partly by the fact that one person would note especially one part of the

¹ See articles by B. I. GILMAN, *Amer. Jour. of Psych.*, 4 and 5.

musical composition and another person another part, and some of the pieces given would include parts of very different natures.

In some experiments of my own made (in 1913) before I had read of Mr Gilman's, this last difficulty had been avoided by the playing of only short portions of compositions. I played the following selections on the piano to small groups of people:

- (a) Mendelssohn. *Songs Without Words*, 44, Bars 1-13.
- (b) Portion of *Marche Romaine* — a type of piece in martial style suitable for very young learners.
- (c) Schubert. *Moments Musicaux*, Op. 94, No. 3, Bars 1-18.
- (d) Beethoven. *Sonata* in C sharp minor ('Moonlight'), Bars 1-15.
- (e) Beethoven. *Sonata*. Op. 26. First movement, Bars 1-17.
- (f) Sullivan. *Mikado*. Madrigal.

No doubt with such short selections one would lose much of the full effect of the whole compositions, but there is less diversity within the small part. It should be noted that there were, of set purpose, no guiding questions given, such as Mr Gilman used. My forty subjects were simply asked to describe their experiences as fully and as carefully as possible. They were students already practised to some extent in introspection.

These experiments certainly confirmed Mr Gilman's result as to the great diversity of impressions and associations. One surprising result elicited by the experiments was the amount of visual imagery and of definite associations, for example, of church bells, suggested by the music. I do not, however, think many of my subjects were very 'musical'. I should certainly expect, from my own experience and from inquiries of those who are deeply moved by music, that there is as a rule little suggested in the way of visual imagery or definite association. Indeed, the experiments confirm other experiments with chords, described later, in suggesting that the associative judgement (other than the formal musical association) is of low aesthetic value.

One type of imagery which I found very prominent in these experiments was imagery of movement, and even incipient

movements. Repeatedly I found subjects saying they felt impelled to get up and move, especially in response to the March (*b*). Thus: '(*b*) caused a feeling of joy, and made me want to smile and jump up.' 'I can feel myself marching to the tune.' 'I felt the inclination to beat time with my foot very predominant, and could scarcely restrain the motion.'

Nearly every subject experienced strong motor impulses or vivid auditory imagery in reference to (*b*), and often these were felt with other pieces. Several felt the impulse to laugh in response to the tripping cheerfulness of (*c*); two wrote that they laughed aloud.

In making a final estimate of these introspective analyses I must remark that either they are very inadequate accounts of the experiences of the subjects (and of typical experiences in musical appreciation) or their experiences were not of a very high aesthetic value, whether owing to the subjects themselves (mostly untrained in music) or to my playing. All these causes may have contributed; but I should imagine that most keen lovers of music would say that what music expresses is the otherwise inexpressible, or that at least to a very considerable extent it cannot be uttered in words, only in music itself. No doubt the same applies to pictorial art. Yet this does not prevent us from saying that certain descriptions of our experiences are partially fitting and accurate so far as they go, and others entirely wrong. And when A says that a certain piece is sad, and B says it is cheerful, each may at least be certain that the other's description would not suit his feelings. Hence, we can conclude that interpretations and introspective records justify us at least in emphasizing the enormous individual variations in the responses to music.

In another recent experiment with twelve professional students of music I had two selections played by an expert pianist: A. John Ireland's *Chelsea Reach* (about the first twenty bars), and B. Frank Bridges' *Water Nymphs* (first part). The students were asked simply to describe their experience in listening. They were not told the names of the pieces or of the composers. Piece A was pleasing to most but displeasing to some. The comments of different persons refer to the following:

Peace after storm, Calmness, Dream-like, Busy city with quiet square, Slightly exhilarating, Sad, Tragic, Yearning, Unemotional, Petulant — a wide range it will be seen. Piece B, however, produced almost invariably the same type of impression: hustle and bustle, scurrying, speed with grace, bursting banks, waves or rushing water (several). Yet two felt no appeal.

Other experiments have shown that a great composition (e.g., Chopin's *Funeral March*) with a very definite emotional tone may stir similar feelings in a large number of individuals at the same time.¹ Music, we may perhaps conclude, is a language in which a great composer can speak to others, and some, but not all, may understand it as he meant it. The fortunate will feel, at times, as Rolland says of Beethoven: 'When we are saddened by worldly miseries, it is he who comes near to us, as he used to go and play to a mother in grief, and without uttering a word thus console her by the song of his own plaintive resignation.'

The fundamental appeal of sounds. The human voice is a communicator by its various tones of comfort or warning, as we find in the earliest months of life. Indeed, we may note it in the response of the young of animals. Other sounds make their appeal at a remarkably early age. Notes on two of my boys even at one month, and frequently before two months, show that low bass chords played on the piano would often stop loud crying, and after about two months so would chords of higher pitch. At two months I noted of the boy B that while high chords would stop his crying, low chords would produce happy 'goos', and the same effects were produced by low and high notes played on a melodion. Miss M. W. Shinn, a remarkably acute and careful observer, also noted that her niece, at the age of one month, was quietened by chords played on the piano.²

In order to find out whether vocal sounds, especially vowel sounds, had any definite and regular character and beauty, one

¹ For full experimental evidence as to imagery, associations, the effects of varying rhythms, harmonies, pitch and tempo, and individual differences in the response to music, see my *Experimental Psychology of Beauty* (Methuen, 1960), Chapters XI and XII.

² *Notes on the Development of a Child* (1909).

experimenter asked for judgements from fifteen subjects (all women) upon various vocal sounds made by herself. It was found that the *u* sound (as in mud) was easily the least popular, eight subjects liking it less than any of the other sounds. The *a* (father) was the most pleasing, closely followed by *e* (get) and *o* (go). *Oi* (toil) was last but one.

By adulthood, associations with expressive words may have something to do with the affective tone, but probably there is something more fundamental in some cases. For example, the *u* sound, the most disliked, appears in the natural expression of disgust, usually written 'ugh'.

The pleasingness of musical sounds. That single musical sounds can be pleasing to most people was clearly shown in some experiments I did with 146 adults, mostly students, who assessed each interval, when played, on a seven-point scale, as 'very pleasing', 'pleasing', 'slightly pleasing', 'indifferent', 'slightly displeasing', and so on. The two notes of the interval were played simultaneously on a good piano. All the harmonious bichords within the octave were often described as 'very pleasing'. The average score of the major third was between 'pleasing' and 'very pleasing', and all intervals except the four dis cords had positive scores.¹

In experiments with single notes played on tuning forks, Dr C. S. Myers also found that the notes proved to be 'pleasant' far more frequently than 'indifferent' or 'unpleasant'.²

Varying attitudes towards musical intervals. In my experiments with intervals just described the subjects were asked to give reasons for their judgements. One marked individual difference appeared in that the same interval (even the minor third) played at the same time to a small group, appeared 'cheerful' to some and 'sad' to others. (The minor third, it may be added, was described as sad or plaintive only half as often as was the major third.)

¹ See C. W. VALENTINE, 'The Aesthetic Appreciation of Musical Intervals among School Children and Adults', *B.J.P.*, 1913, 6, p. 197. A full account is given in my *Experiments in Psychology of Beauty* (Methuen, 1910), Chapter X.

² See 'A Study of Individual Differences in the Attitude Towards Tones', by C. S. MYERS with contributions by C. W. VALENTINE, *B.J.P.*, 1914, 7, p. 97.

As we have seen, different people may take very different attitudes towards a colour or a picture, resulting in judgements of varying kinds, subjective, associative, etc. In my experiments with musical intervals the answers showed to a remarkable extent attitudes similar to those assumed towards colours.

The *objective type* of judgement is shown in the following comments: perfect blending, full and round, one note competes with the other for prominence.

In the *subjective type* the person thought especially of the influence of the notes upon *himself* – thus: jars on the nerves, gives a creepy feeling, makes one draw a deep breath, feeling of lethargy produced, causes melancholy, stirring, makes me think my cares are over for a time.

With the *associative type* of judgements, most frequently the reasons given for liking an interval were that it recalled some source of a similar sound (church bells, gong, etc.) or some piece of music.

In the *character type* the hearer read something of personality into the notes. They were described as follow: decided, assertive, meek, sullen, happy, lacking joviality, hopeful, bold, and forceful. Persons who often gave this type of judgement seemed to get more enjoyment out of the harmonious intervals than did those of the other types. Indeed, the assumption of this mental attitude sometimes resulted in a discord being pleasing. Dr Myers, who was a skilled musician, and found similar types of judgements in his experiments with tuning forks, remarks that we may expect these different attitudes to tones to throw light on individual differences in attitudes towards music.¹

Aesthetic value of the attitudes. Before considering the aesthetic values of these various kinds of attitudes we must distinguish between two kinds of associations in the judgements on musical intervals. One kind we may call 'musical associations'. These were usually suggestions of a succeeding interval or of a bar of a musical composition of which the interval formed a part. These may be labelled 'fused' associations, using the term

¹ *Op. cit.*, p. 69. DR MYERS gave a much more detailed analysis of the types.

Bullough adopted in his experiments with colours. They are frequent with very musical people, and are evidently of higher value in the aesthetic scale than are such associations as the following, which occur frequently in the judgements of musically untrained Elementary School children – 'reminds me of a church bell', 'of a siren', 'of a tin can being squashed'. These latter may be called 'non-musical' or 'non-fused' associations.

In order to get some evidence as to the aesthetic value of the various attitudes, I calculated the frequency with which each type of attitude was accompanied by the judgement 'very pleasing'. In Table V the various aspects have been arranged according to the frequency with which each type of judgement was accompanied by the judgement 'very pleasing'. Parallel to this is given Mr E. Bullough's estimate of the order of the aesthetic value of the aspects in the case of colours. Mr Bullough's criterion, however, is a different one from mine – viz., the extent to which the attention is concentrated upon the object itself rather than upon non-fused associations or on the self.

TABLE V
Order of Aesthetic Value of Types of Judgement

In experiments on musical intervals	In experiments on colours
I. Character	I. Character
II. Musical (fused) associations	II. Fused associations
III. Objective	III. Objective
IV. Subjective	IV. Non-fused associations
V. Associations other than musical (non-fused)	V. Subjective or physiological

It will be seen that there is a remarkable similarity between these two orders.

These four types of judgements also appeared in my experiments with selections from Beethoven, Schubert, and others described earlier, and in my experiment referred to above with a group of twelve young professional musicians.

The development in young children of discrimination between concords and discords. Experiments with intervals were also per-

formed on some 200 Elementary School children between the ages of six and fourteen, taken in small groups. In these experiments I had the assistance of some Training College students. A student took charge of each child and wrote down what he said about an interval when I played it on the piano. The children were simply asked to say whether they liked the notes or not. For the essential precautions which were taken in these experiments (e.g., to guard against suggestion) I must refer the reader to a detailed account elsewhere.¹ I may state here the main results.

(1) No appreciable preference for concords before discords is discernible before the (average) age of nine, but at this age a very marked advance takes place. The change at this age is significant in view of the fact that other investigators have found that great advance takes place by the age of nine in the discrimination of pitch.

(2) It is not till we reach the age of eleven that we find that the discords show a negative score, i.e., are on the average more displeasing than pleasing to the children.

(3) At twelve and thirteen (children of which ages were grouped together) we suddenly find changes which result in an order of preference for the various intervals which is almost exactly the same as that given by adults. It was then only at the age of twelve or thirteen that, on the average, these Elementary School children, with their musical training almost confined in those days to school or church singing, reached the normal final stage of development in respect to this essential element for musical appreciation.

Very different results were obtained in a Preparatory Girls' School, in which nearly every girl over seven learned some musical instrument, and all of whom heard good music fairly often. Here even the little ones of six and seven show a definite dislike of discords; and by the age of about nine these children give an order of preference for the various intervals almost identical with that given by adults, a stage reached by the

¹ C. W. VALENTINE, 'Aesthetic Appreciation of Musical Intervals among School Children and Adults', *B.J.P.*, 1913, 6, or *The Experimental Psychology of Beauty* (Methuen, 1916), Chapter X.

Elementary School children only at the age of twelve. There is little doubt that this difference was largely due to the early training of the Preparatory School girls, though they were also probably of higher average intelligence than the Elementary School children. It would be interesting to discover how the early distinctions between, and preferences for, our conventional concords and discords have been affected by wireless music, and more varied and better musical education in the schools, in more recent years.

Adaptation to discords. With five persons I performed a prolonged series of experiments with the intervals within the octave – each one being presented thirty-four times to each subject in twelve sittings over a period of several days or weeks. To one of these five subjects, the four discords eventually became on the average as pleasing as the eight concords, and to one they became actually slightly more pleasing. If we turn to the introspective remarks of these subjects we get some clue as to the reason for this remarkable change. It is apparently partly due to a change in aesthetic attitude. Thus one subject at first wrote thus of three of the discords: ‘unpleasant sensations in the head’, ‘unable to apprehend the notes as one; they fight’, ‘the start jars’. At the end of the experiments he said of the same discords, ‘interesting, seems to involve mental activity’, ‘plaintive’, and ‘stimulating’.

These results indicate that, even in a series of experiments, if sufficiently long, some adaptation to discords may take place similar to that which has taken place within the history of European music. There we find progress marked by the admission of intervals previously forbidden. Chords which at one time were regarded as ugly discords have come to be used freely in modern music.

It is possible that the kind of adaptation which appeared in these experiments may have been similar to that which Max Meyer found in some experiments with quarter tone music, made on the model of some Asiatic tunes. Most of his subjects found this music at first highly disagreeable, but it became pleasing to some after a dozen or more repetitions. He himself found the music at first very unpleasant, but later it became

more and more beautiful. On the other hand, some of his subjects maintained their dislike of the music almost unchanged throughout the experiments.¹ Meyer thinks that they had already acquired such a definite set in their way of thinking musically that they were very slow to adapt themselves to such novel music. These may resemble those of my own subjects who maintained their dislike of the discords; and this difference may be one of the causes of the difference between those who can appreciate more modern harmonies and those who find them distasteful.

Rhythm. The study of rhythm is important owing to its prominence both in music and verse. As we saw in Chapter XXIV, the apprehension of simple rhythms involves a specific ability and is not merely dependent on 'g'; it is also unrelated to pitch discrimination. Rhythm seems to be a very fundamental element in our mental life. In performing any regularly recurrent actions we almost invariably tend to fall into a rhythm. It has been shown experimentally that when a series of sounds is made, by an electrical apparatus, exactly equal in loudness and duration, the mind is usually impelled to read a rhythm into the series, so that certain notes seem emphasized, and hence louder, and the intervals seem unequal. The experiment can be made in a simple form by tapping with a pencil in *irregular* groups of beats (thus $\underline{\text{---}}$ $\underline{\text{-----}}$ $\underline{\text{----}}$ $\underline{\text{-----}}$ $\underline{\text{-----}}$; accenting the selected beats only slightly) in the presence of a number of people. I have found that a regular rhythm is read into such an irregular series by nearly every person, most saying the beats gave trochees, —**u** —**u**, others dactyls, —**uu** —**uu**, others finding an accent only every fourth beat. Most people find it easier to imagine a two-group rhythm or a four-group rhythm than a three-group, while a five-group is harder still.

This feeling for rhythm is evidently very fundamental. Little children love rhythmic sounds. They often enjoy even poetry which is largely beyond their understanding if it is read with a marked rhythm.²

¹ Musical Aesthetics'. Amer. Jour. of Psych., 14.

² See the next chapter, p. 474.

The importance of rhythm in some forms of primitive music is well illustrated by the interesting phonographic and other records of music obtained by Dr C. S. Myers among the Sarawak Malays. Their orchestra consisted of various gongs and drums. Most kept excellent time together with one another in a regular rhythm. The largest gong (*Tawak*), however, was beaten in a most complicated rhythm, which Dr Myers, though himself an expert musician, was quite unable to unravel.

'On one occasion [he writes] the player of the *tawak* becoming tired, he passed on the instrument to another Malay, who proceeded to beat it just as a European would do, keeping strict time with the orchestra. He was laughed at by his audience, and very soon retired covered with ridicule. It was evident that only an expert could play it.'¹

By means of a special apparatus Dr Myers was able to obtain a record of this rhythm. It was only after prolonged analysis of the records that Dr Myers was able to get the key to the rhythm, which then proved to be an exceedingly complicated one, quite incomprehensible to European ears.

Such primitive music has apparently developed along the lines of more and more complicated rhythm, while our European music has developed along the lines of more and more complicated harmonies, though rhythm, too, has of course developed with us. It would seem possible that rhythm may develop still more in our European music. Early training in rhythmic movements — such, for example, as that given by the Eurhythmics of M. Dalcroze — enables children to move their arms in a certain rhythm and dance at the same time in a different rhythm, a feat which the untrained adult usually finds quite impossible.

These examples of primitive music dependent merely on rhythm, and the enjoyment by little children of mere rhythmic beats without music, and the independence of the results of tests of ability for rhythm perception as distinguished from perception of pitch or harmony, all these emphasize the importance of rhythm as an element of appreciation in music. They

¹ See 'A Study of Rhythm in Primitive Music', *B.J.P.*, 1.

also make more comprehensible the divergence of taste in music. Dr Wing's researches distinguish persons who in musical appreciation depend mainly on harmony, from those depending mainly on melody.¹ To young children 'of about seven to nine harmony does not appeal so much as melody, nor melody so much as rhythm'.² From self-observation and conversation with others, I am sure that the relative importance of rhythm in music varies also greatly in adults. One highly skilled musician and composer tells me that for him 'atmosphere' and harmonies are the main source of appeal, rhythm coming last. He revels in dreamy studies, such as some of Debussy's. For myself I find little enjoyment in music which has no decided metrical beat. Bach, Beethoven, Haydn, Mozart, Handel delight me; much of Debussy I find only mildly attractive.

Attention and the unifying of musical appreciation. In discussing musical tones and rhythm we have been considering only elements which enter into our enjoyment of music. With music, however, as with a picture, the whole is more than the sum of the parts. A discord is modified by its neighbours. The accent in rhythm can strengthen the effect of one note and so on. The 'phrases' (a short series of notes forming a unity in themselves) must be grasped as wholes to be fully appreciated, and in this the experience of listening to music is an essential aid.

As we have seen, habituation to new harmonies enables surprising novelties to be enjoyed after a time. When the simple and more fundamental rhythms are mastered, so that they can be followed in a subconscious way, attention can be focused on more complicated rhythmic forms accompanying these fundamental rhythms. To the expert these in turn become easy of apprehension. For full aesthetic enjoyment this is necessary; for music, like other forms of art, must conform to the principle of *facilitation of attention*.

In the tones which in themselves can so deeply appeal to us, music already possesses a powerful mode of stimulation. When

¹ B.J.P., 31, p. 354.

² G. BURT, Report of P.M.A. at a Report on The Primacy of L. Appendix III, p. 260.

these form a recurring series of impressions the effects can be heightened. For not only does rhythm make its fundamental appeal to our feelings, with its suggestions of free and joyous movement, but also the arrangement of the tone impressions in regular rhythmic form enables us to apprehend them in groups, and so respond to a far greater stimulus than would otherwise be possible, without confusion of mind.

At the beginning of the last chapter (p. 422) we saw that in the aesthetic experience there must be adequate change to maintain interest and to stimulate intellectual activity. In music, when the rhythm is simple, the variety is supplied by the movements in the melody and the changing harmonies. In the Malay music, with an absence of melody and harmony, change was supplied by much more varied rhythms. And as in the apprehension of a beautiful curve one part gives us a clue to the nature of the rest, so the apprehension of the rhythmic form of a piece of music enables us to receive the rest of the music in a mental attitude of repose which would be impossible if the notes followed in irregular order, or if a new rhythm appeared every few bars. Music thus, in a very marked degree, satisfies the formula which one writer has offered as the definition of aesthetic experience — namely, the combining at the same time of 'stimulation with repose'.¹

Education in the appreciation of music. From the preceding paragraphs it follows that the first essential in musical education is the hearing of good music. Considerable advance has been made in recent years in this respect in many schools. Years ago, when I taught singing, among other things, in a Grammar School, children rarely heard anything in school except their own attempts at singing, often after learning the tonic sol-fah system. Taking an actual part in singing may be good so far as it goes, and we have to bear in mind the child's love of doing something himself; but in former days it usually left him unfamiliar with great musical compositions which he might have learned to enjoy.

Singing may be loved or disliked according to the suitability of the songs and the capability of the teacher. Reports of the

¹ F. D. Peirce in the *Psychology of Beauty*.

popularity of school subjects in Elementary Schools are given later in Chapter XXXII (p. 512). It was found that in the inquiry in 1912 singing was bottom of the list for boys aged eight, sixth out of nine at ten and a half.¹ In 1925, however, a London inquiry showed singing as first for boys of seven, fourth out of fifteen at ten. In the Worcestershire inquiry later still, Music and Singing came very high with both boys and girls of ten. If I may add a personal note, almost the only pleasant memory I have of three years in one of the old Lancastrian Schools, from the ages of eight to eleven, is that of the singing.

The joining in an orchestra, for those who are competent, forms, of course, an admirable supplement to musical appreciation, and under right guidance a school orchestra can be the means of a preliminary training for quite good performers. Some years ago I had the pleasure of hearing first-rate music played by the orchestra of the Central School, Kensington, where all the training of the orchestra had been done in the luncheon period by a gifted music teacher.²

In more private music lessons in earlier days we spent many painful hours in practising scales and exercises on the piano – essential if one was to acquire the art of piano playing, but of little value in cultivating aesthetic appreciation. Even in recent years, when general talks on music have been introduced into schools they have sometimes provided little music for enjoyment, and too much difficulty theory – as in one well-known school, in which a specially imported music teacher gave lectures on music right above the heads of most of the boys, some of whom for a long time still thought that an ‘interval’ was like the ten minutes’ break between two lessons.

That the mere listening to good music can have a great effect has been shown by the effects of broadcast music. Many people it may be, have never progressed beyond a fondness for jazz or a liking for music as a background for conversation. But several

¹ One little girl said she did not like singing because it made her legs ache!

² A book which deals admirably with the approach to music through the child’s own activities – singing, rhythmic movement, percussion, and instrument playing is DR J. MAINWARING’s *Teaching Music in Schools* (Paxton, 1951).

young people, within my circle of personal acquaintances, who never heard good music except on the wireless, have gradually come to love the great masters and eventually paid with their own precious pocket money for admission to first-class symphony concerts.

If this can happen merely through good music playing upon the ear of a young listener, still more can be done by appropriate guidance. I cannot exemplify this better than by quoting an example of its possibilities given by a musician who was a great pioneer in the education of musical appreciation, Professor Stewart Macpherson. He wrote:

'Before the annual concert at one of our great public schools, at which a professional orchestra was to perform, the principal music-master offered to meet any boys who liked to come to him week by week during the term, and to play them the various works that were to form the programme of the concert. The first week about thirty somewhat shy boys put in an appearance; he played to them, made them sing (or whistle, if they could not sing) the chief themes until they were thoroughly familiar with them, discussed the form and the various points of interest in the course of the music, and so forth. The result was a splendid success; the little group of boys was enthusiastic, and after that first meeting the master had the satisfaction of welcoming as many as two hundred boys at his weekly class, boys who voluntarily gave up other occupations in order to hear the music and his talk about it.'¹

There is, I think, little doubt that such analysis and exposition of music combined with demonstration may increase the understanding and appreciation of the music, as those who listened to the broadcast talks of Sir Walford Davies will agree, or more recently to the programmes of Dobson and Young.²

¹ *The Musical Education of the Child*, published in 1915, but still well worth the attention of music teachers.

² As to the effects of suggestion on the enjoyment of music, see my *Experimental Psychology of Beauty* (Methuen, 1960).

The value of the history and theory of music. We may agree that some study of the history of music and of great composers may greatly widen the interest in music and the possibilities of enjoyment. But studies of historical facts about music and of theory of music have their dangers. I well remember, when I was a member of the Northern Universities' Matriculation Board, hesitating as to whether I should vote for music to be included in the matriculation subjects. I wished to encourage music in the schools, yet feared that making it an examination subject might emphasize intellectual studies at the expense of appreciation.

At the end of the last chapter we saw the possibility that a study of the history of art, of the biographies of painters, and of the various techniques of pictorial art may strengthen the interest in art as a whole, but may at times interfere with the pure aesthetic enjoyment of beauty. The same thing applies to music. Thus in the above-mentioned experiment with my professional musicians in training, who were simply asked to describe their experience while listening, I had such reports as the following: 'Thoughts as to the modern music of Bartok', 'Turmoil of modernity near the end', 'Progressions quite normal'; 'Suitable for Children's dance', 'Modern discords', 'Something like Debussy or Ravel'.

In general, however, I think that the merely intellectual is not likely to interfere with the pure aesthetic enjoyment of music so much as it does at times with visual art. An attempt to learn to play a musical instrument certainly increases one's admiration for the skill of the expert – as I have realized through recent efforts with the clarinet. But thoughts of the skill of the performers and the knowledge of the particular composer's characteristics and so forth, so prominent in the music critic's notices of concerts, may be merely fleeting in a music lover's enthralment with the music, or may contribute some added feeling while thoughts as to technique remain unconscious.

If we take the enjoyment of music as a whole, knowledge of all kinds about music and about great composers, by making our interest more complex, makes it possible for it to be more

sustained. It also affords moments of change from the maintenance of the pure aesthetic attitude, and so brings that back later with renewed intensity; witness the more rapid fatigue or boredom, in a long concert, of the layman compared with the expert, though the latter may be the first to change from the purely aesthetic into the critical attitude for a time.

CHAPTER XXX

THE APPRECIATION OF BEAUTY AND AESTHETIC EDUCATION: III. POETRY

The unpopularity of poetry. How many people really like poetry enough to read some regularly through adulthood? A university or school teacher cannot fairly judge from his circle of acquaintances, as they are likely to be more intellectual and better educated than the average. Yet as to these, one well-informed writer states that even among the intellectual élite it is rare to find a person who reads poetry for pleasure.¹ I have known even two professors of foreign languages of whom this seemed to be true, so far as English poetry was concerned; and one distinguished professor of psychology told me that poetry 'meant nothing' to him. The actual proportion of the whole population who read poetry it is impossible to discover, but here are a few suggestive statistics.

A report from the Sheffield City Library shows that for the year 1937-38, out of the books issued (over half a million) the proportion of books of poetry was about 1½ per cent.² The borrowers were, of course, only a part of the total adult population. On the other hand, there may be many who have copies of their favourite poets' works and only read those.

The British Institute of Public Opinion Survey 113 (October 1944) reports that of those asked 'What book are you reading at the moment?' 1 per cent. stated that they were reading some poetry. (But 47 per cent. either stated they did not read any books, or gave no reply.)

Probably people with the best home libraries tend to use the

¹ See DR P. B. BALLARD'S *Thought and Language* (1934), p. 250.

² See *The Use of Books in Sheffield*, p. 5. Calculations I have made on the Leeds (1934) and Bristol (1935-36) reports suggest a percentage of only about 0·6 and 0·7 for poetry. These were war years.

public library least; on the other hand, large numbers with few books at home do not use the libraries. Perhaps we are safe in estimating that of the general reading public, probably not more than 3 per cent., or let us be generous and say 5 per cent., read poetry at all.

This low figure contrasts with the reports of interest in poetry during adolescence. Professor Olive Wheeler found that 29 per cent. of her 100 workers stated that they had experienced an increased interest in poetry during adolescence;¹ but it must be remembered that the workers were a highly selected group, as they were voluntarily attending W.E.A. lectures. Dr W. D. Wall found that among 196 (unselected) young workers or trainees (ages fourteen to seventeen) 9 per cent. of the boys and 23 per cent. of the girls reported an increase of interest in poetry since the age of thirteen. Even if the interest was still slight, it does imply *some* reading.² Dr Wheeler's figures for University students were — men 55 per cent. and women 71 per cent., while among my own 200 University graduates 56 per cent. of the men and 57 per cent. of the women said they had attempted to *write* poetry during adolescence.³

Is there, then, a decline in the interest in poetry as the years pass? One investigator found such a decline even in the years from twelve to fifteen. Among Grammar School pupils the numbers who said they *never* read poetry out of school were as follow:⁴

	12 ; 0	13 ; 0	14 ; 0	15 ; 0
Boys, per cent.	29	36	47	41
Girls, per cent.	15	18	25	31

(As to the poems, the narrative poems were the most popular with boys, and to a less extent with girls) The figures may seem at first puzzling in view of other reports of the increase of interest in poetry among adolescents; but they need not be. Thus, of Wall's adolescent boys 9 per cent. said they experi-

¹ *The Adventure of Youth* (1945), p. 56.

² *The Adolescent Child*, p. 162.

³ C. W. VALENTINE, 'Adolescence and Some Problems of Youth Training', *B.J.E.P.*, 1941, 13, p. 58.

⁴ JENKINSON, *What do Boys and Girls Read?* (1940).

enced an increase of interest. That leaves 91 per cent. who did not, and might include, say, 50 per cent. who experienced a decline in interest; so also with the 71 per cent. of Wheeler's workers who did not experience an increase of interest. Possibly also the University students and other older adolescents hardly thought of the narrative poems, read largely for the story, as poetry, and referred chiefly to more romantic lyrical and 'love' poetry when they wrote of an increase of interest during adolescence.

However that may be, the general fact does seem to emerge, which observation and discussion confirms so far as my experience goes, that the custom of reading poetry declines as men and women become engrossed in the affairs of everyday life. One recalls the well-known lament of Darwin that he had lost his earlier enjoyment of poetry through concentrating on science. For most people more mundane affairs occupy the mind. The world comes to be

‘too much with us, late and soon
Getting and spending we lay waste our powers.’

Wordsworth, indeed, went so far as to say:

‘It is an awful truth, that there neither is nor can be any genuine enjoyment of poetry among nineteen out of twenty of those persons who live, or wish to live, in the broad light of the world – among those who either are, or are striving to make themselves, people of consideration in society.’

Possibly Wordsworth was prejudiced by the current criticism of his own poetry; but it is intriguing to note that his estimate, reached by a less laborious method than mine, is the same as I suggested above, as to those who do not read poetry, only he added that they *could* not enjoy it.

As to the last point we have to agree that, if the enjoyment of poetry involves something more than general intelligence – some specific abilities, or specific sensitivities, say, to word sounds, rhythm, or to the blending of the music of words with the ideas expressed, then we may expect to find some intelligent people whom Nature has endowed but poorly with these

specific abilities or sensitivities (as we saw in Chapter XXIV was the case with other specific abilities). And if for an appreciation of poetry keen enough to stand against the competition of other adult interests, a high degree of several specific sensitivities is required in conjunction, then we can understand why such persons are relatively few. Of course, as we shall see later, unsatisfactory teaching of poetry in the schools may be the main cause why poetry is not read and enjoyed by many more adults than it is at present.

Intelligence and aesthetic sensitivity. In poetry and prose we meet new aspects of beauty, not found in Nature, pictures, or music; a new kind of material now forms the basis for our aesthetic experience, namely, words and ideas and their relations. Clearly this involves, as a pre-condition, intelligence not involved in the same way or to the same degree in the more sensory and perceptual enjoyment of pictures or music. We are not, then, surprised to find that in one inquiry with tests of the appreciation (liking) of good poetry (and good prose) the correlation of appreciation with general intelligence was as high as 0·63, whereas that between the appreciation of pictures and intelligence was only 0·31, and for music and intelligence 0·22.¹ In the same investigation it was found, however, that for literary appreciation, intelligence is not enough in itself. It is possible to be highly intelligent and yet have a low degree of literary appreciation.

When the effect of intelligence is allowed for, however, there still remains something in common between the appreciation of pictures, music, poetry, and prose – we may call it general aesthetic sensitivity. In the inquiry just mentioned among a group of children of similar intelligence, there remained a slight tendency for those who showed good taste with pictures to do so with poetry and prose extracts, and a still slighter connexion between literary and musical appreciation.

In the enjoyment of prose an aesthetic element may often appear and may even be predominant. In prose form, indeed, we may have genuine poetry. But usually, we are primarily

¹ See 'Tests of Literary Appreciation', by E. D. WILLIAMS, L. WINTER, and J. M. Woods, *B.J.E.P.*, 1938, 8, p. 282.

concerned in prose with the thoughts expressed, with facts or arguments; whereas aesthetic appreciation is always involved in the full enjoyment of poetry, and we shall limit our discussion to that. Confining ourselves to poetry, we find that in another inquiry tests of appreciation correlated with two combined tests of general intelligence only to the extent of 0·35. When, however, only the scores for certain *verbal* tests in the general intelligence tests were considered, this correlation rose to 0·63.¹

Individual differences in the appreciation of poetry. With a group of seventy-two University graduates I carried out in 1932–33 an experiment by reading parts of five poems and asking the students to report as to each one: (1) whether they found it very pleasing (+3), pleasing (+2), slightly pleasing (+1), indifferent (0), slightly displeasing (-1), and so on; and (2) whether they found it very beautiful (+3), beautiful (+2), and so on. They were also invited to add reasons and comments. One of my objects was to exemplify individual differences in attitudes to the same poem; another aim was to discover how far ‘pleasingness’ and ‘beauty’ were regarded as identical; and another to make a rough test of ‘taste’ in poetry among a group of educated persons. For this last purpose I purposely included, among the poems read, one which I considered a very bad poem. First the poems were all read by me aloud, once each; then each was read a second time, and only then were the judgements to be recorded. The poems were as follow:

- A. Byron, *The Ocean* – first stanza.
- B. A highly sentimental and moralizing sonnet by a then popular writer, Ella Wheeler Wilcox.
- C. Shelley, *A Lament*.
- D. Rupert Brooke, Sonnet, *The Soldier*.
- E. De la Mare, *Epitaph*.

My group of subjects included forty-two men and thirty women. About half the men and one-third of the women were graduates in Science; the rest in Arts.

¹ See K. B. LEOPOLD, ‘The Effect of Creative Work on Aesthetic Appreciation’, *B.J.E.P.*, 3, p. 54.

Let us first consider the questions of 'taste' and individual differences. The bad poem, B (as I considered it), came decidedly last in the average scores, which are given in the table below:

Average scores for each person

Poem	Pleasingness	Beauty
A	+1.87	+1.75
B	-0.15	-0.60
C	+0.72	+1.10
D	+1.50	+1.63
E	+0.59	0.0

It will be seen that B is the only poem with a negative average score. It was described as 'trite', 'moral tripe', 'Sunday School verse', 'not poetry', 'jingly', 'smug'. Nevertheless, it was given a +2 mark (pleasing) by ten graduates, and a +2 for 'Beauty' by five (including two with honours in English).

It is not only in reference to Poem B that great individual differences appear. Thus as to E, Pleasingness is given +3 by ten students but -3 by six. 'Beauty' is given +3 by three, and +2 by ten, but -3 by seven and -2 by nine. As to C, Pleasingness is given +3 by twenty-four students, -3 by one, and -2 by five; but for Beauty only one gives it less than -1.

On the whole, the results demonstrate clearly the great differences in individual preferences. Only A (Byron) wins almost universal approval. Rupert Brooke's sonnet "If I Should Die" scores more +3s for Beauty and for Pleasingness than did Byron's stanza, but it also roused more antagonism largely among the men. One (Honours in English) thinks it 'cheap sentimentality'. Another also with Honours in English says the opposite - 'At last,' he writes, 'we have feeling instead of sentiment.' One man who gives it +2 for Beauty but -3 for Pleasingness wrote, 'This poem has lost its former appeal. I saw the graves of Austrian soldiers blasted in the rocks in the Dolomites - after seeing the British graves in Belgium.' He admitted he could not judge the poem without prejudice. 'It is jingoistic,' he adds.

Clearly some students recognize a marked distinction be-

tween the poem as a work of art and the ideas expressed. As to B, several say the thoughts give great pleasure, but there is no beauty in it; others say D would please but that their convictions repudiate the attitude expressed. We shall touch on this problem of content and form in a later paragraph.

As to '*Beauty*' and '*Pleasingness*', it was clear that my students were far from identifying these. I am not saying that they were always right in their distinction. One or two explicitly stated they could not separate the two; some that a poem might be pleasing without being beautiful, but not vice versa. The facts simply show that among a group of University graduates the two are not regarded as the same. As there was a seven point scale (3 to -3), the extreme possible divergence of a mark for Beauty and that same poem's mark by the same person for Pleasingness was 7 points, which never occurred; but a difference of three, four, or five was shown in nine judgements, and a difference of 2 in 38 out of 355 judgements. (The correlation between Beauty and Pleasingness was 0.77.) In some cases students clearly recognized that their own personal, perhaps peculiar experiences or attitudes, prevented the poem from being pleasing, while recognizing also that the poem *should* be regarded as beautiful. On the whole, the attitudes of these people fit in with the assertions of some of our great poets as to the 'essential connexion of poetry with pleasingness'. 'Poetry is ever accompanied by pleasure,' wrote Shelley (*A Defence of Poetry*); and Mathew Arnold quotes approvingly Schiller's assertion that, 'The right art is that alone which creates the highest enjoyment.'

Marked individual differences in the appreciation of a poem are also revealed by Dr I. A. Richards, who obtained reports from a group of Cambridge undergraduates most of whom were taking an Honours course in English.¹ Unfortunately, the reports, though rich in individual details, do not lend themselves to statistical summary. But ample evidence is afforded of extreme opposites among judgements. For example, as to the

¹ See his book, *Practical Criticism*, which contains many useful details as to individual points of view and bearing on other matters discussed in this chapter, e.g., words, rhythm, and subject matter.

same poem one writes, 'Here is a noble thought clothed fittingly in powerful verse', and several others refer to its 'nobility'; whereas another wrote, 'The poem is worthless', others 'The moralising of the poem is deliberate' and 'Prose chopped up to fit a metrical scheme' (pp. 22-24). Similar differences are to be found in the reports on all the twelve poems used; though no doubt the differences would have been less marked among these University students had more of the poems been undoubtedly great poetry, or execrably bad.

The appeal of words. In some poems the words and their arrangements contribute the main element to their attractiveness; in others it is mainly the thoughts expressed which grip our attention. In the best poems the words and ideas both make their appeal and are finely matched. As with pictures and music, we will consider some of the elements which may enter into our enjoyment of poetry, while bearing in mind the fact that the whole final aesthetic appreciation is directed towards the unified whole in which these elements blend and in which they modify one another.

We have already seen that mere vowel sounds may be very pleasing. So may the more complex tone sounds of words make their appeal, if rightly spoken, and this element enters in if we hear a poem well read, or experience, when we read a poem to ourselves, vivid auditory imagery of a kind which has that sheer appeal of sound, though the auditory images may be weaker in their effect than the actual sounds. One leading critic has asserted that poets intend their poems to be read aloud.¹

In addition, many words have associated feeling-tones which cling to them. As Stout² remarks: 'Poets often produce their best effects by accumulating references to objects round which

¹ Certainly I find some poems much more moving if I read them aloud, especially if I read them to others. Tennyson could not read his own *In Memoriam* aloud, and, breaking down, writes his son Hallen, in *Letters of a Man in Society*: 'Some eminent when poetical critics say that much of their poetry the public first heard read aloud, without attempting to understand them. See my *Experimental Psychology of Poetry* (*Memoriam*, etc.), Chapter XIV.'

² G. F. STOUT, *Manual of Poetry*, 7th edit., revised by C. A. MACF., p. 616.

pleasing associations cling.' 'Tennyson's *Brook*,' he adds, is a good example:

'I wind about, and in and out,
With here a blossom sailing,
And here and there a lusty trout,
And here and there a grayling.

And here and there a foamy flake
Upon me, as I travel,
With many a silvery waterbreak
Above the golden gravel.'

As with colours, such feelings associated with words may be dependent originally on objects or experiences not thought of at the moment. They are 'fused' associations, now part of what, in the widest sense, the words 'mean' to us.

In an earlier chapter we saw in our discussion of complexes that a strong feeling may be attached to an object or word which acts as a kind of *symbol* of an experience, the main facts of which have been forgotten through repression. Apart from actual abnormal repression a similar process seems to take place in normal experience. Something of the glory of the regiment hangs round the flag, which becomes a symbol with feelings attached to it, even without our thinking of the great exploits of the regiment.

But such feelings can be bound up with a word only if the essential experiences have been passed through before: a point to be remembered in considering what poetry young children may be expected to enjoy. Wordsworth constantly refers to the accumulated influence of the emotional experiences of boyhood among the mountains and streams of the Lake District, those 'feelings of unremembered pleasures', those 'obscure feelings representative of things forgot'. But not the same halo of pleasant association would hang round the word 'stream' for the boy whose knowledge of a stream is confined to one in concrete banks amid the back streets near his home. The word 'home' is itself richly charged for most of us with the emotional

results of innumerable happy experiences. But what for those whose home has been largely a centre of conflict or distress?

Rhythm and metre. The fundamental appeal of rhythm we have already discussed in the section on music (p. 457). Something of that appeal we may expect in the reading of poetry. In addition, the regularity of metre facilitates attention (Coleridge, indeed, said that it increases its vivacity);¹ while the coincidence of beat and certain words may emphasize their prominence. Apart from their meaning, the mere sound of words in metrical form, read well, can be enjoyed. Edmund Gosse, in his book *Father and Son*, tells how he listened enthralled to his father's reading of Virgil which revealed to him the amazing beauty there could be in the mere sound of verses. Edmund Gosse was no doubt exceptionally sensitive to such sounds, but Mr Greening Lamborn also reports that he once heard an Oxford classical scholar –

'read a passage of Homer to some boys of twelve, who knew no language but their own; they listened breathlessly and then some told him that there had been a challenge, a fight, and a song of triumph – which was really the "substance" of the passage. He then read some lines of Virgil, and they said "it was a cavalry charge".'²

The connexion of rhythm and the dance is obvious, and the subconscious suggestions of movement are likely to be frequent, and especially prominent in persons with vivid motor imagery. At other times the lulling soothing effect of regular beats may be predominant. The somnolent effect of the quiet monotonous crooning of the mother to her babe is well known. There is nothing inconsistent therefore in accepting both Coleridge's view that metre is sometimes a stimulant and that at other times it acts as a soothing and almost hypnotic agent. It seems to act differently at different times and indeed according to the type of metre, and to the speed of reading. Sometimes, by its appropriateness to the subject matter, it can help to a fuller

¹ *Biographia Literaria* (Everyman Edition), p. 197.

² See his *Rudiments of Criticism* (1917), p. 20.

'living into' that subject matter, as in the galloping metre of 'Half a league, half a league, half a league onward' or:

'I sprang to the saddle, and Joris, and he,
I galloped, Dirck galloped, we galloped all three.'

To conclude this paragraph, with the preceding paragraph still in mind, we may say that the combination merely of musical words and of metre can sometimes please us even when there is little in the thought of a poem that appeals. The opening lines of the well-known poem by Coleridge, based on one of his dreams, form an example in my own case:

'In Xanadu did Kubla Khan
A stately pleasure-dome decree:
Where Alph, the sacred river, ran
Through caverns measureless to man
Down to a sunless sea.'

To discuss the appeal of alliteration in these lines, and the repetition of liquid consonants, would take us too far into the literary critic's domain. We must, however, emphasize the fact that rhythm in poetry is not mechanical and completely regular. In this too there should be some variety in the midst of general unity. Also the meaning and emotional tinge of a word affects its weight or stress in the metre. In much modern poetry there is no regular metre at all. Some readers will probably find their experience, in reading those lines of Kubla Khan, affected by visual imagery, and to the influence of that in the appreciation of poetry we will now turn.¹

Imagery in the reading of poetry. I first became interested in the part played by imagery in poetry through noticing Wordsworth's frequent references to his own intense enjoyment gained from visual imagery. That poets generally have had vivid visual imagery is, I think, usually assumed. Their own use of the term 'imagination' seems frequently to mean imagery, especially visual, with, however, the added modification

¹ For further reading on rhythm and metre in poetry see I. A. RICHARDS, *Principles of Literary Criticism*, Chapter 17, and P. B. BALLARD, *Thought and Language*, Chapter 14.

of creative activity. It is not merely reproductive imagery, for 'Imagination bodies forth the form of things unknown'. Yet this imagination is classed by Shakespeare with the visual hallucination of the lunatic who 'sees more devils than vast hell can hold'.

Wordsworth, indeed, draws explicit attention to the use he makes for his own enjoyment of merely reproductive imagery. Consider, for example, the well-known *Lines Composed above Tintern Abbey*:

‘These beauteous forms,
Through a long absence, have not been to me
As is a landscape to a blind man’s eye:
But oft, in lonely rooms, and ’mid the din
Of towns and cities, I have owed to them,
In hours of weariness, sensations sweet.’

Some literary critics indeed seem to maintain that, even for the appreciator, imagery is the very essence of poetry. For example, Mr Greening Lamborn says that ‘To exist as poetry, emotion must be translated into music and visual images.’¹ Professor E. Allison Peers, in an account of a valuable experiment on the ‘appreciation of poetry by schoolboys’, writes of poems the ideas of which are ‘contained in the imagery’ as contrasted with others in which imagery is ‘not essential’.² Mr Prescott, in his book *The Poetic Mind*, insists that the true test of poetry is ‘imagination’ (p. 140); and he defines imagination on the preceding page as ‘the eye of the mind, the mental or ideal counterpart of the bodily eye’, and elsewhere (e.g., p. 188) his phrasing suggests that he uses imagination as equivalent to imagery.

With a view to discovering the extent to which imagery was of influence in the appreciation of poetry, I carried out in the years 1912-13 some experiments on groups of graduates and others in the University of St Andrews, and Dundee Training College. Short poems or selections from poems were read out. There were twenty-one men and twenty-eight women. The

¹ *The Rudiments of Criticism*, p. 14.

² ‘Imagery in Imaginative Literature’, *J. of Exp. Ped.*, No. 4, 2, 274.

poems comprised the following: (a) Wordsworth, *Lines Composed above Tintern Abbey* (first twenty-five lines); (b) G. Herbert, *The Gifts of God*; (c) E. Waller, *Lines on a Girdle*; (d) and (g) Two stanzas of an inferior type; (e) Shelley, *To the Moon*; (f) Byron, *There's not a joy the world can give*.

The poems were read aloud twice to the class by myself. The students were then asked to write down:

- (i) whether they found the poem very pleasing, pleasing, slightly pleasing, indifferent, slightly displeasing, etc.;
- (ii) the reasons for their judgement;
- (iii) details as to their experience on hearing the poem read.

Care was taken to make no mention of imagery at this stage.

I later made a similar experiment with two other groups of students. The verses selected were: (a) and (b) the first and fourth stanzas of Shelley's *Ode to the West Wind*; (c) Wordsworth's *She Dwelt among the Untrodden Ways*. When all the writing was finished the students in both experiments were asked explicitly to give an account of the imagery experienced, and to estimate the extent to which imagery had helped or hindered the enjoyment of each of the poems.

Some years later similar experiments were done with a group of graduate teachers in Birmingham. In this series I added a further experiment in which subjects were later asked to try to get visual imagery when reading the poems and to report any different experiences resulting.

For details as to the methods and results of all these experiments I must refer the reader elsewhere.¹ Here I can only summarize the main findings.

(1) If the poem involves descriptions of natural objects a majority of the persons tested experienced imagery and found that it added to their enjoyment, even if the imagery were only intermittent. In some cases the imagery seemed to be the main source of pleasure.

¹ 'The Function of Images in the Appreciation of Poetry', *R.J.P.*, 1923, 14, p. 164; and *The Experimental Psychology of Beauty* (Methuen, 1960), Chapter XIII.

(2) Very decided individual differences were found. Even the nature poems were highly appreciated by some without any perceptible imagery. This does not bear out the suggestion that visual imagery is essential.

(3) As several most reliable subjects reported, imagery which is vague and indefinite may be just as helpful as very definite clear images, though in a somewhat different way. Clear visual imagery seems to make one element of the poetic enjoyment to approximate to the actual enjoyment of beautiful scenery. Vague imagery tends to go with a more reflective attitude.

(4) A great range of capacity for imagery revealed itself. With some persons imagery is insistent in the reading of poetry. It comes without the slightest effort; with some it 'cannot be suppressed'. On the other hand, some get no imagery even with a nature poem and can get scarcely any, even by the greatest effort.

(5) A great capacity for facile imagery is no guarantee that it will be used in the appreciation of poetry.

(6) A law of compensation or rivalry is suggested. Visual imagery is reported to displace, or be displaced by, auditory imagery, or by emphasized attention to rhythm, sound, or meaning. It does not therefore always follow that the addition of imagery to one's experience in reading a poem will ensure additional enjoyment.

(7) Dwelling on imagery, even only to the extent of observing it, while reading poetry may result in irrelevant imagery, such as the image of a huge heart when hearing the line in Wordsworth's *Sonnet on Westminster Bridge* - 'and all that mighty heart is lying still', or in relevant imagery being emphasized unduly.

(8) Deliberate attempts are, however, sometimes harmful, and this suggests that the method should be used sparingly in the teaching of poetry in schools. The safest plan would seem to be merely to call attention to the possibility of visual and auditory imagery and thereafter to leave the arousal of appropriate imagery to the feeling stimulated by the poem. Much, however, depends upon the nature of the poem.

Imagery of children when reading poetry. In the experiments already referred to by E. Allison Peers the subjects were pupils of ages varying from thirteen to seventeen years. First, several groups were tested for vividness of all kinds of imagery. Visual imagery was found in all and auditory imagery in nearly all. Images of movement and of smell were reported by most. The detailed reports are, I think, convincing that pupils of these ages can introspect fairly reliably on such matters. Later, poems were read aloud to these groups, and they were asked to write an account of any images experienced. Professor Peers's findings were substantially in accord with my own based on the experiments with University students; but he was concerned partly in the effect of imagery on understanding. As to poems in which 'the meaning is contained in the imagery' he reports that strong imagery may sometimes be 'of great value' yet sometimes may 'hinder the *understanding* of the poem'. In poems where the imagery is not essential, it is often a 'hindrance to interpretation'.

In these experiments the mere questioning of the pupils about their imagery would, as we have seen, be likely to act suggestively. What the experiments show is that, so far as imagery is desirable, young people of these ages usually have the capacity to form the images and to be influenced by them much as my older subjects were; but both Allison Peers's experiments and my own call attention to the danger of teachers dwelling too much on imagery, and urging pupils to 'picture things in their minds' when reading poems.

Subject matter. The relative importance of form and substance in poetry, and their relation to one another, are problems that have been acutely discussed in literary criticism. They are not merely psychological problems, and here we can only touch on a few psychological aspects of the question of subject matter. We have seen that poetry even in an unknown tongue can, if well read, be enjoyed. But of course the most complete experience involves the appeal of both content and expression, and is best of all when these two are exquisitely suited to one another. Only then can we get that complexity and harmony which is essential for the full stimulation of attention and yet that

facilitation of easy apprehension through unity and through form. Here we approach the view that the division of 'Substance and Form' is unreal, as one great literary critic has asserted.

Again we should, I think, agree that the appeal of the subject matter for its own sake may form an important constituent element of the poem. Thus the deeply religious man cannot be indifferent to a religious element in a poem; it may add something to the total appeal of the poetry, as do the descriptions of mountains and rivers in a poem to the keen lover of nature.

If, however, expressions in poetry, of views – religious, social, or political – had all to be accepted before we could enjoy the poetry, our range would be greatly restricted. To some persons at least it is possible to enjoy poems of even contradictory views on life: for example, in my own case the pessimistic Rubaiyat of Omar Khayyám, the cautious yet hopeful *Say not the Struggle Naught Avileth* of Clough, and some of the triumphant and confident lines of Browning.

But if there is to be genuine aesthetic enjoyment there must not be a conflict. When a poet philosophizes – as is done even in some of the finest passages – the reader, if he is to enjoy it aesthetically as literature, must accept, if only for the moment, the poet's point of view, so that he can simply apprehend or contemplate the philosophy and submit himself to the hypnotic influence of the poet.¹ Significance adds to the richness of the experience and sometimes may carry us along over intervals in which the beauty of mere words fails.

The possible influence of crude subject matter. It will be recalled that the popularity of a picture with young children largely depended on the subject of a picture, often merely on the objects depicted. So, too, young children are especially dominated by the story told in a poem or the things described. This tendency, however, is by no means confined to children. As we have seen, even University graduates with honours in English literature may prefer a highly sentimental and moralizing

¹ I think Dr I. A. RICHARDS means much the same as this when he draws his distinction 'too definite a one' between 'intellectual belief and emotional belief' in the attitude to the 'doctrine' of a poem. See his *Practical Criticism*, Chapter 7.

sonnet by Ella Wheeler Wilcox to other poems carefully selected from Byron, Shelley, and other poets of the first order.

The tendency also revealed itself clearly in an inquiry by Dr P. B. Ballard.¹ He selected eight short poems, four of which he thought good and four bad. A group of 'well-read friends and colleagues' agreed on this classification. Several groups of training-college students and of senior children, and one group of eighteen unqualified women teachers (average age over thirty) were asked to arrange the eight poems in order of preference. The average of the votes of the women teachers put first a dreadful 'poem' which Ballard (and I personally agree) puts last but one, and the second stanza of which reads:

'Never be fretful, cross, or fault finding;
The cheerful spirit goes on free and gay;
But those whose lives are a series of grumbling
Always see obstacles placed in their way.'

The other moralizing poem which Ballard puts last (and again I agree) was put third by three women teachers, and first by four out of twelve classes of school children aged twelve to fourteen.

The enjoyment of poetry by children. We have already referred to the special appeal of narrative poetry to children, and even of an appeal due to the people or animals or places a poem describes. On the other hand, we have seen that children can enjoy the sound of poetry even if they cannot understand any of it. Interesting further facts are revealed in an inquiry made in two elementary schools in Leeds.² Thirteen classes (Standards I to VIII) were used, with 550 children in all. The class teacher wrote on the blackboard the names of six poems recently studied by her with the class, and the children were asked to say which of these poems they liked best and if possible to give their reasons. Miss Feasey admits the difficulty that the children's replies would be greatly influenced by the teachers'

¹ *Thought and Language*, p. 251.

² See 'Children's Appreciation of Poems', by LYNETTE FEASEY, *B.J.P.*, 1927, 18, p. 51.

methods of dealing with the poems, but claims that repetition of the same comments by a given class reveal this, and that individuality of comment reveals genuine spontaneity. The fact that different children in the same class often gave entirely different types of judgements supports Miss Feasey's contention.

What we have just said about the special appeal of subject matter is confirmed especially as to the lowest standards; e.g., many say they 'like to hear about fairies', and boys like poems about fighting and adventure. Masefield's *Sea Fever* was a special favourite (pathetically enough) with Standard V in a school in one of the poorest parts of Leeds.

For classification of the reasons for liking poems Miss Feasey partly uses the type of judgements used by Bullough in experiments on colours. *Subjective judgements* often appear, e.g., 'it makes you feel sad', 'it cheers people up', and as to de la Mare's *Someone*, 'Because it tells you of someone who came knocking at my door and it makes you frightened'. Or again, 'It makes me want to dance and be merry.' 'It sends a thrill through you.' Crude *associative judgements* appear in many references to personal experiences recalled – of picnics, Christmas and its presents, or stories read. Miss Feasey also found that liking was often attributed to *visual imagery* roused – 'I can picture the sparkling water.' 'It makes me feel as if I was in a garden and looking at the rose petals.' Much less frequently there were images of sounds, movement, touch ('I can feel the wind') and smell ('I seem to smell the sea and feel the breeze').

Miss Feasey is not so successful in finding judgements which could be classified under the '*character*' type – applying to the poem adjectives usually applied to human beings. She lists under this type 'happy', 'jolly', 'cheerful'; but she rightly points out the close resemblance of these to subjective judgements.

The attempt to write poetry as an aid to appreciation. In discussing pictures we agreed that the attempt to paint might at least lead to a better appreciation of the artist's skill and an increased tendency to notice things of beauty with something of the artist's eye. With music, learning to play an instrument at least

makes one realize more the skill of the adept; and there have been teachers who induce children to compose little tunes in order to stimulate their interest.

As to poetry, in some schools children have been encouraged to write poems and have them printed in the school magazine. On general grounds we might expect such attempts to write poetry to have their effect on appreciation. At least they should impress the youth with the difficulty of the poet's art, especially if the complex form of the sonnet is attempted. Experimental evidence, however, as to the effects of such efforts is scanty. Miss K. B. Leopold, in the article already referred to, applied tests of appreciation of poetry to fifty-eight women in a training college. The tests were in distinguishing superior from inferior poetry. The students were then divided into two groups approximately equal in their performance in the appreciation tests and in intelligence tests of a verbal type. Then for a whole session of thirty-three weeks one group (the experimental) was given weekly an hour devoted to actual exercises in rhyming and rhythm, matching lines and writing poems in various forms; the other group had the usual lectures and discussions in literature. At the end of the session similar appreciation tests were applied again. It was found that on the average the experimental group had not improved any more than the control group, but there were great individual differences, one improving 40 per cent., another not at all. On examining individual cases Miss Leopold found a tendency for those with the best capacity for verse making to improve most, through the practical exercise of it, in discriminating good poetry from bad. In any case this experiment relates perhaps more to judgement than to enjoyment.

With younger children it would seem a sound principle to let attempts to write poetry be quite voluntary. Some children seem to enjoy it, and their productions are sometimes illuminating. They may at least reveal to the teacher individual capacities which are not revealed by the children's comments on poems, for appropriate criticisms or commendations can often be learned from the teacher and repeated by the intelligent child who does not really appreciate the poem. In 'A

'Sheaf of School Verse'¹ Miss Nina Taylor prints some productions of girls of twelve to fourteen in an Elementary School; and she claims that 'no poet would be ashamed of owning the authorship of some of the verses'. One of these is the following by a girl of thirteen years:

'Late October'

'Patter of fitful rain,
Shiver of falling leaves,
And wail of wind that has left behind
The glory of fruit and sheaves.'

'Mist on the crowning hills,
Mist in the vales below,
And grief in the heart that has seen depart
Its summer of long ago.'

This is interesting as it shows how a child of limited experience of the sadness of the passing of happier days can by the touch of imagination use that experience to suggest much more.²

No one, of course, would identify the capacity to enjoy poetry with the ability to produce it. I shudder to think of revealing even to kindly friends some of my own attempts, and yet I can be moved greatly by poetry that I love. Nevertheless, the verses that children will produce and apparently be content with are an interesting revelation of individual differences.

Training in the appreciation of poetry. If we take appreciation in the sense of ability to judge good and bad there is little doubt that much can be done at least by pointing out bad points in poems; though even in this some results of my own experiments described above, and still more the detailed reports of Dr I. A. Richards, show that even University courses in literature do not enable some people to judge the good and bad, as selected by experts.

To develop enjoyment of poetry would seem to be harder

¹ See *J. of Exp. Ped.*, 3, p. 364.

² It is, of course, possible that verses learned from magazines may be submitted as original. But the evidence of school magazines and of verses written on prescribed topics in schools is, I think, enough to show that some children are capable of imagining such things beyond their own experience.

still. As with pictures and music, the main hope seems to be to bring to the notice of children poetry which we think they are likely to enjoy. To insist on poetry generally acknowledged to be great, merely because it is great, being carefully studied by children, is not likely to have good results. Indeed, according to some of the great poets themselves, as well as great literary critics, if there is not enjoyment or pleasure, then the verses read are not 'poetry' for the reader.

The interest and enjoyment of the children should then be the first consideration; but with this should go careful elimination of really bad verse. In view of the influence of mere sound, and of right interpretation in reading aloud, the teacher's voice and her reading of the poem are clearly important factors; and for good reading real appreciation by the teacher herself is essential. What we have said in earlier chapters about sympathetic induction of emotion and the influence of suggestion is also relevant here. In nothing is the influence of suggestion greater than in aesthetic appreciation, and this applies to poetry as much as to visual art and music.

On the negative side, if we are to encourage a genuine aesthetic attitude, we must avoid intellectual obstacles. Poems with obscure references and difficult words must be avoided, or the difficulties cleared out of the way before and not in direct connexion with the poem itself.¹ Too much analysis, or asking the children why they like a poem, must be avoided, especially in junior classes.

The execrable methods of teaching Shakespeare in days gone by are an example of what to avoid. When I studied a play, for examination purposes, we learned the 'notes' by heart; and indeed, we could probably have passed the examination almost by learning the notes and 'introduction' without reading the play itself. As to Shakespeare's plays, it is, of course, now increasingly recognized that the best way of encouraging appreciation is to see the plays acted and for the children to do some acting of selections themselves.

What we have said about examinations and 'knowledge about' in connexion with music and visual art applies here too.

¹ On this point, see F. H. HAYWARD, *The Lesson in Appreciation*.

The general interest in poetry is likely to be greater and more permanent as we learn more about the poets themselves and their social background. We may see more in their poems, and enjoy some of them more, through that knowledge. But such knowledge must, in the actual enjoyment of the poem, be only in the background of thought; and it is not an essential for real enjoyment.

Nor must learning to judge excellence and style be identified with the increase of aesthetic enjoyment. It will cut out enjoyment of bad verse; it will widen intellectual interest. But this, too, must become a secondary thing, a background, if we take as our criterion enjoyment. The cultivation of good taste, however, may be justified on the ground of other values; though sometimes there is a feeling of mere intellectual superiority, which must not be confused with higher aesthetic enjoyment. In any case, in view of the fact that some of our greatest poets have denounced the work of others as worthless, and in view of the enthusiasm of some critics for very 'modern' poetry and of its rejection by others, it is well to allow a wide freedom of choice among young people if they can be got to read poetry at all.

Experiments with modern poetry. As I could find no detailed reports of experiments with modern poetry, I planned some with graduates in two Universities and with students in a Training College that had given special attention to modern poetry. Ten poems were used, selected by three experts in English literature. The term modern poetry, however, covers such a wide variety of poems that wider investigations are needed. Though some of the aspects already dealt with in this chapter appeared again – viz., imagery, rhythm, ideas conveyed – it was clear that intellectual apprehension, often difficult, was the main factor, as indeed modern critics say it should be; for example, Dr David Daiches regards the essentials as 'intellectual toughness in the midst of passionate feeling'.¹

Beauty was rarely found in the poems except in detached elements, such as rhythm, phrases, or symbols, in this reminding me of what I found with modern paintings.

¹ See *The Present Age*, p. 65.

Again I was impressed by the fact that young people, much less set in their tastes than older ones (like myself) who were brought up on pre-twentieth-century poetry, can find pleasing such a wide variety of modern poems, though most of the students seemed to have had little introduction to modern poetry at school.¹ I am advised, however, that more examples of modern poetry are now appearing in anthologies used in schools; and one of my collaborators, Mr J. N. Britton, has read, in a Broadcast Talk, some short poems with a modernistic tinge, written by young children. I asked him if he thought children's fondness for writing 'free verse' was due to their limitations, as was said of their modernistic paintings (p. 440). He thought emphatically not, except that they cannot write regular rhythm without monotony. He emphasized that poetry is a form of spoken language which is mastered before written language, and so some children can write good poetry before good prose.

¹ For details I must refer readers interested in modern poetry to my *Experimental Psychology of Beauty* (to be published by Methuen in 1960), where I have devoted a whole chapter to the subject.

DEVELOPMENT IN INFANCY

In the first chapter I contended for some study of general and adult psychology before special studies of educational applications and of child psychology. These latter can most profitably be undertaken when the fundamental capacities and qualities of the mind have been explored qualitatively, and where possible quantitatively. Later on, however, some direct study of the various stages of childhood and adolescence is important for the teacher. Incidentally, the study of infancy gives opportunities for the elementary mental functions to be observed in their earliest forms, and the ultimate innate impulses in greater isolation than they can be found later.

Recent emphasis on the importance of infancy. Several developments in the last few decades have called public attention to the special importance of the study of early childhood. One has been the attempt to diagnose mental deficiency in the earliest months of life.¹ Another has been the emphasis of the psychoanalysts and others on the supreme importance of the first years as determinants of future character.² Here there has been, I think, considerable exaggeration. Thus Freud stated that 'the little human being is frequently a finished product in his fourth or fifth year'.³ Adler went so far as to say that 'one can determine how a child stands in relation to life a few months after his birth'.⁴

¹ See especially the work of DR ARNOLD GESELL, who devised and standardized tests of mental development for children of four months and over. See his *Mental Growth of the Pre-School Child* (1925) and *The First Five Years of Life* (1941).

² Some of the following paragraphs are largely quotations or paraphrases from my *Psychol. of Early Childhood* (3rd edit., 1930), Chapter I, and my earlier Presidential Address to the Psychology Section of the British Association, 1930.

³ *Introductory Lectures on Psychoanalysis* (1922), p. 268.

⁴ *Understanding Human Nature*, translated by W. B. WORFF, p. 42.

It is not my wish to underestimate the importance of the first few years of life, but rather to stress it. No advantage, however, is gained by exaggeration; and we cannot state, on the evidence we have before us, that the first four or five years of life are more important than, say, the years of five to ten, or of adolescence. What exactly is meant by the assertion if it is made? It is rather like saying that the safety of a house-roof depends more upon the foundations than it does on the stability of the walls of the first or second stories. All stages of development, in fact, are important. The Freudians have certainly shown that in many cases the experiences of the earliest years may continue to exert a considerable influence on the life and character of the child when he grows up, though he may have forgotten those experiences. It may also be admitted that if bad social relationships — say with parents — are set up in the first few years, those relations may be fixated so that the parents' efforts later on to change them may be futile.

But this is not to say that the child is a 'finished product' and impervious to all other and later influences. Indeed, the records of many Children's Homes, Remand Homes, and Child Guidance Clinics show that the character of a child may be considerably changed when he is moved out of the family environment as late as ten or twelve years of age, or even later. Decided changes are sometimes noted in the behaviour of children who enter an Infant School at 5 ; 0 or 6 ; 0 when the home environment has been unsatisfactory, even though the children continue to live at home.¹

Even apart from change of environment, great changes often take place in the children themselves. As we mentioned in Chapter VII (p. 86), a temporary period of revolt somewhere between the ages of two and four is very common, and perhaps may be regarded as normal, and even a good sign for later development. Among 142 children (chiefly of between three and six years) showing marked emotional symptoms or anti-social behaviour (aggression, stealing, cruelty, etc.), the great majority showed improvement after eighteen months at

¹ DR SUSAN ISAACS, herself a good Freudian, testified to this: see her section of *The Educational Guidance of the School Child*, p. 68.

school - without special psychological treatment: (87 per cent. of the under-fives and 53 per cent. of the over-fives).¹

It is certainly not proved that if a child suffers from an injurious social environment, or erratic and foolish discipline till, say, five or six, but enjoys a favourable environment thereafter, it is necessarily more handicapped than a child who has a satisfactory environment till that age, and then comes under wrong discipline or vicious influences continuing through the unstable and suggestible period of adolescence.

In any case, it seems unnecessary to make extreme statements about the absolute fixation of character by the age of five or six. It is enough for our purposes if we admit that this early period is probably far more important for future development than was at one time thought: a fact which has an obvious bearing on the provision of Nursery Schools.

General facts as to early development. In considering the stages of development of the child, several general facts and principles must be borne in mind.

First, there is no definite break between the various periods, say of babyhood, infancy, early childhood, and so on. One merges into the next by almost imperceptible steps. We may describe a certain period by the most prominent and characteristic mental features of that period, but these features will be appearing in a nascent form in the preceding period, and continuing, though possibly in a less marked form, in the succeeding period.

Second, the great individual differences among children in the rate of development result in one child at 6 ; o still showing abilities or temperamental traits characteristic of the 'average' child of 5 ; o or even only 4 ; o, another at 6 ; o may more resemble the majority at 7 ; o or 8 ; o.

That during the first year or two all children seem to follow substantially the same order or pattern of development, has been emphasized by so great an authority on infancy as Dr Arnold Gesell. He found it to be true even of prematurely born infants, so predominant are the factors of internal self-deter-

¹ See JEVON D. CUMMINGS, 'A Follow-up Study of Emotional Symptoms in School Children', *B.J.E.P.*, 1930, 16.

mination in development, in spite of abnormal environmental changes.¹

It would seem, however, that this regularity of sequence refers only to very fundamental processes occurring in the first year or two, and to the stages within each main type of activity, e.g., linguistic or motor. It leaves room for considerable individual differences in highly specific abilities, especially on a higher level. Furthermore, though the sequence within each series (say motor development) is remarkably regular, the parallel development between different types of activities – say motor and speech – is not so great. Some infants are well behind the average in talking though ahead in walking and vice versa. For example, my little girl Y was ahead of her brother B in all points of linguistic development in the first three years, and far ahead of her brother A. Yet she did not crawl till she was 0 ; 10 $\frac{1}{2}$, whereas B could crawl at 0 ; 7 and A could crawl backwards at 0 ; 7 $\frac{1}{2}$ and forwards at 0 ; 9.² In singing (tunefully) and in drawing there may be specially marked precocity or retardation; and in the hand-and-eye co-ordination needed for writing, a child of six may be far behind his level of general intelligence.

In some exceptional cases even the most fundamental functions may appear out of season; for example, the onset of puberty in a girl at 3 ; 6 – though she was otherwise normal up to the latest time of observation at 17 ; 0.³

*The physiological basis of mental development.*⁴ A question important from a national point of view and that of the school-teacher as well as for the individual child, is how far poor physical development or early malnutrition may affect mental progress. Now there is no doubt that these may affect the capacity to learn, while such conditions last. Even adults cannot do their best mental work when physically below par. Also in our present state of knowledge we must admit that serious defects

¹ See GESELL's article on 'Maturation and the Patterning of Behaviour' in the *Handbook of Child Psychology*, edit. by C. MURCHISON (1923), p. 217.

² See my *Psychology of Early Childhood* (3rd edit., 1916), p. 11.

³ An example reported by A. GESELL in *Biographies of Child Development*, p. 76.

⁴ This topic is dealt with again in our last chapter (Mind and Body).

in physiological development in the first year or two may in many cases never be overcome. But it is encouraging to find that the permanent effects of early malnutrition, or even of disease, on inborn intelligence are not so great as might be expected. Nature seems under adverse conditions to secure what Dr Arnold Gesell calls 'a preferential growth of the nervous system'. For example, among 258 children of the ages of one year, one and a half, and two years he found only a slight inferiority in general mental development among the rachitic children. There was a definite inferiority in tests of walking, but even this was much less at two years than at one year.¹

In an extensive inquiry in Glasgow, Shepherd Dawson found that some forms of acute and chronic disease, even when they caused long absences from school, had little, if any, effect on innate intelligence.²

Of course, if malnutrition or disease continues during the school period it is sure to affect educational progress, even if it does not cause frequent absence; and in fact malnutrition and disease are more frequently found in educationally backward children. Yet even here, as Burt points out in his authoritative book, *The Backward Child*, the chief cause of the connexion between physical and mental retardation is in many, possibly in most, cases inherited, or at least innate, lack of vitality. We must bear in mind that children who are ill-nourished are likely to be (more frequently than the average) the offspring of parents themselves below average intelligence; so that heredity may be the main factor in the low intelligence of children suffering from malnutrition.

We can, however, comfort ourselves with the thought that, so far as present intellectual weakness in a young child is due to malnutrition in earlier years, there are good hopes of that being overcome if we can see that proper feeding and adequate sleep, fresh air, and exercise can be secured for the infant now

¹ See his book *Infancy and Human Growth*, p. 268.

² See *Intelligence and Disease* Medical Research Council Special Report Series, No. 162, 1931, p. 51. Only disease in the ductless glands or in the brain, seriously affected intelligence.

that he has come more within the control of the school. That again has a bearing on the provision of Nursery Schools.

Maturation. This is a concept of fundamental importance in the psychology of childhood. Let us begin with an illustration. That lively minded psychologist William James once maintained that if some widowed father would deliberately cause blisters on the feet of his baby when first showing an inclination to stand and walk, and if he would keep the blisters going for some months, then he would find that, when they were healed, the boy would be able, quite suddenly, to walk as well as if he had been practising for all those weeks. We may put that in another way and say that James held that maturation was more important than learning in the development of the capacity to walk.

Maturation may be regarded as mere ripening, as the development due to internal factors rather than to environmental influences – granted, of course, sufficiently favourable environment to support life and health. The necessity for some degree of maturation before training or education can be effective is obvious. No one would think that by sufficiently concentrated training a baby of twelve months could be taught to write legibly or to read. But the great importance of adequate maturity for school work is not fully recognized. Let me give some striking examples of the relative importance of maturation as against training in very early childhood.¹

One investigator selected two groups of ten children all aged 2 ; 0 and of the same initial ability in three skills – climbing, buttoning, and cutting with scissors. One group was given twelve weeks special practice in these skills, and so got well ahead of the control group. But then after one week's similar practice the control group caught the other group up.² Dr Arnold Gesell experimented on two identical twins aged 0 ; 10. From week forty-six twin C was prevented from getting any special training in climbing and the handling of blocks for six

¹ Fuller details and further records are given in my *Psychology of Early Childhood*, Chapter III.

² See J. R. HILGARD, 'Learning and Maturation in Pre-School Children', *J. of Genetic Psych.*, 1932, 41.

weeks, while twin T was specially trained in these activities during this period of six weeks. At the end of the six weeks it was found that the more mature but untrained twin immediately climbed unaided without any previous training, though at the earlier age Y had needed help. Most significant of all, the trained child, at the end of this training period, continued chiefly to crawl in climbing, while the untrained C walked.¹

That last point is suggestive. I have sometimes wondered whether those adults who still use their fingers for reckoning numbers began to do mental arithmetic at a stage when their mental apparatus concerned was not sufficiently ripe for such mental operations and the habit of using the fingers 'stuck'.

What we said in Chapter XXIV about the futility of beginning Arithmetic too early applies also to the beginnings of teaching to read. One leading authority on backwardness in reading states that a mental age of 6;0 is necessary to justify the beginning of formal instruction in reading.² That means that a good proportion of children cannot profitably begin it before the age of seven. No doubt a dull child of six can be taught to recognize simple words at sight; and we have to bear in mind the discouragement of children if they feel they cannot begin a study as early as their fellows. Nevertheless, discouragement comes too with lack of steady progress, and the rapid bound in a study which comes when a child is sufficiently mature for it may make up for the delay in beginning, even of those pupils who were mature enough earlier. It has been found that a group of schools in the United States which delayed reading instruction for some children found no consequent loss in the reading scores in the intermediate grade.³

Clearly much will depend on the teacher and the ability of the individual pupils. Here is another of the many problems which would be easier of solution if infant classes were not so excessively large.

¹ See A. Grant and H. Tizard, *Post-Preschool Children*.

² See E. J. Schenck's *The Psychology of Teaching Reading* (Doubleday and Boyd).

³ See G. DeWitt Boley, *Child Development*, 1933, 26.

Let us turn now to some actual investigations as to the value of very early formal instruction in school.

When is a child mature enough for formal instruction in school? That the very early beginning of formal studies may be of little or of no value was indicated many years ago in a book entitled *When Should a Child Begin School?*, by W. H. Winch, who found that children who entered Elementary Schools in London and began formal studies about the age of five were, by the age of twelve or so, not ahead of their fellows (of the same age) who had entered school a year later, i.e., at the age of six. He attributed this fact to several causes:

- (1) The distaste caused by starting subjects too soon and the development of confused ideas which may get fixed.
- (2) The loss of novelty at too early a stage when progress was slow, and so the loss of interest.

Winch's inquiry, however, was made in Elementary Schools before the First World War. It seemed to me that later improvements in Infant Schools might entirely change the results in more recent years. A similar inquiry was accordingly carried out with somewhat more explicit details by a student of mine, Mr E. M. Rhodes.¹ In three Elementary Schools Rhodes inquired into the progress of children who entered the Infant School at the age of four instead of five or, in some cases, six. He found that at about the age of twelve the earlier entrants compared on the average with the later entrants as follow:

- (1) There was equality as regards pure memory work, which we should expect in view of our previous doubts (expressed in Chapter II) as to the possibility of a general memory-training.
- (2) The early entrants were *worse* in Arithmetic, although they had begun it earlier, which bears out the point which we have just emphasized.
- (3) The earlier entrants were rather *better* at Handcraft. Here they had the advantage of a longer training in work which they were capable of doing with some satisfaction, even

¹ See his article in the *Forum of Education*, 1926, 4.

at the earliest age of entry, i.e., they were sufficiently mature for simple handwork.

(4) The earlier entrants were worse as regards general knowledge.

Rhodes, however, dealt with only three schools and less than 200 pupils of the age of twelve. Furthermore, it does not follow that, because these early formal studies in the schools concerned were of little or no value, we cannot find work for those early years which is of permanent value. Valuable experiments on this problem are already being made in Nursery and Infant Schools, and further 'follow-up' studies of these should be made.

To conclude this discussion on maturation we may suggest that the best clue as to whether a child is sufficiently mature to engage in any particular activity — mental or physical — is given by his own spontaneous practice of that activity; at least that suggests that he is mature enough, although the converse need not hold. He may need considerable encouragement to begin activities for which he is mature enough.¹

The ideal periods for learning specific things. The fact that we may avoid waste of time and effort by waiting for full maturation must not blind us to another possibility — that we may wait too long. For some accomplishments there may be an ideal period at which a child is best fitted to acquire some particular skill. For example, there are some experts in the study of foreign languages who maintain that a perfect French accent will never be acquired by an English person unless he learns to speak French well in early childhood; similar statements have been made about learning to play the violin. I noticed in more than one of my own children that when they were about three years old they could imitate French nasal sounds with great ease, but that this ability was largely lost by the age of seven or eight.

There is little direct evidence on this matter; in the nature

¹ P. L. VERNON, M. B. O'GRADY, A. M. COTMAN, *Age and performance in a School of Early Childhood*, *Journal of Educational Psychology*, 1930, 21, 151-160. See also R. H. ROBERTS, *Age and achievement in reading and writing*, *Journal of Educational Psychology*, 1930, 21, 161-170. The ability to read and write is not maintained at later ages. See *P.J.P.* 1930, 25.

of the case it would be difficult to obtain. Occasional examples afford at least some negative evidence; thus one University student who had never learned correct French pronunciation before going to the University (it was thirty years ago) applied herself so thoroughly to it, with the aid of phonetics, that the examiner in French, himself a Frenchman, said to her Professor: 'Of course this girl learned to speak French as a child in France.' This may show what can be done by sufficiently long and great efforts by exceptional people. It does not controvert the general principle that there is a period at which the best results can be got with the least effort.

It is quite possible that, though we may generally tend to press young children on too early and too fast, we may in the case of a few of the abler, fail to make use of early possibilities, at least as regards special *skills*. I quote here a remarkable record, to illustrate this principle. It reports on an attempt to teach a baby of seven months to swim. This boy 'Johnny' was suspended in a tank of water with a strap round his chest daily from the age of $7\frac{1}{2}$ months. No effort was made to teach him strokes, but a toy was put at the end of the tank as a lure. He held up his head and made kicking movements. By the age of 9; 10 he was greatly enjoying it, and at one year he would leave go of the tank. By 1; 5 he would swim twelve or fifteen feet *under* water. Johnny was apparently, however, very exceptional in the way he 'took to the water', judging from the findings with other infants.¹

Montessori asserts that if a child is starved of practice in manipulation at one particular period it suffers for it through life. I do not think that she gives systematic scientific evidence to prove this. But the statement is quite in accordance with what we may expect on general principles; namely, that there is, for each variety of mental or manual activity a 'plastic period' during which it is most susceptible to training; though no doubt the period for the highest intellectual processes is a very long one, extending well beyond adult maturity.

As we saw in Chapter XIV, children tend to play at, and

¹ See M. McGRAW, *Growth: a Study of Johnny and Jimmy* (1925). The case is reported briefly by M. W. CURRIE in her *Child Psychology* (1930), p. 233.

experiment with, each new ability as it appears, whether it be grasping an object, walking, talking, or even the use of a newly understood concept (such as 'Daddy' or 'gee-gee' or 'two'); and it seems reasonable to take the appearance of spontaneous interest in the child in new activities as a clue to the time to stimulate and encourage these activities.

So far I have discussed maturation and plastic periods in reference to mental abilities and motor skills. We know far less about their importance for social adjustment or character training. But it may be well to reflect that premature pressure as to correct behaviour or moral principles may defeat its own ends or lead to the production of a little prig or hypocrite; on the other hand, by too long neglect we may miss the most sensitive period for wholesome influences.

Unfortunately psychologists cannot as yet say confidently the precise age when we may expect the plastic periods for the many stages of social and moral training; but there would, I think, be general agreement that the first five years are extremely important. As regards the growth of normal social adjustment, it is probably desirable that a child, before the normal school age of five, should have social play with varied types of children of its own age and with others younger and older than itself.

The intermittent nature of early development. In considering what abilities or interests are mature enough for encouragement and use we must bear in mind another characteristic of early development. If we follow carefully, day by day, the development of a little child between about 2 ; 0 and 4 ; 0 it will be found that a particular function, say the grasping of the causal relation, may appear once or twice as though ready for practice and then will disappear perhaps for weeks before its next appearance.

This intermittence accounts partly for the different findings by some psychologists as to intellectual development in childhood. Thus the work of Jean Piaget attracted considerable attention some thirty years ago, by emphasizing the limitations and peculiarities of the thoughts of young children. Now Piaget's extensive work was a valuable contribution to child

psychology, but he over-emphasized the differences between child and adult thought, and in particular did not allow for the occasional and even frequent yet intermittent appearance of higher thought processes in early years (including the apprehension of relations of causality, evidence, etc.) before they reached a stage of invariable accuracy which is indeed rare enough in adults.¹ Piaget, for example, speaks of the universal tendency of the child to avoid the use of relationships and says that before the age of seven to eight years the child is 'perhaps incapable – whether in narrative argument or in any of his relations with other people – of differentiating between the various types of possible relations (cause, consequence or logical justification) and of handling them to good effect'.²

Yet as we have already mentioned (Chapter XXIII), Burt found that all the *elementary* mental mechanisms essential to formal reasoning are present by the mental age of seven. By careful daily observations on my own children I was able to detect the *first* appearances of the grasp of relations at far earlier ages. Many examples of these have been given elsewhere.³ Here I will give just a few. (As the children referred to had I.Q.s varying round about 130–145, the ages given should be increased by about one-third or one-half to be on the safe side.)

The first grasp of a causal relation occurred already at 3; 8. Thus: 'What makes the water come again?' asked by Y at 3; 8 when I forked the garden path to get rid of puddles. We may add to these the questions, 'What keeps the sky up?' asked by a boy of 3; 7, and 'Why doesn't the ink run out when you hold up a fountain pen?' – the same boy at 4; 3.⁴

'Because' in reference to human motives may be used still earlier. Thus Y at 3; 4 – 'Come up daddy (out of the cellar) 'cos it's dark'; and G at 3; 6 – 'I like you mummy, 'cos you a good girl and you got a kind face.' Perhaps the most surprising

¹ The two most useful of Piaget's books bearing on the present topic were *The Logic and Thought of the Child* (London, 1926) and *Judgment and Reasoning in the Child* (London, 1932).

² *Judgment and Reasoning in the Child*, p. 16.

³ In my *Psychology of Early Childhood*, in the chapter on 'Intellectual or Thought Processes'.

⁴ See *Early Childhood*, 1925, 6, p. 21.

example of the grasp of a relation at a very early age was a sentence by B at 2 ; 4. 'That too big (for) B, not too big (for) daddy.' Here is surely the first glimmering of an idea of relativity!

'The relation of *evidence* is perhaps the last to appear – at least to be clearly implied in explicit language. But it appeared in Y's conversation at 3 ; 2 when taking care of a baby guest – Y: 'I'm a big girl.' Father: 'No, you are a little girl.' Y: 'I look after the little girl. *Well, then*, I'm a big girl.' Further notes made it clear that evidence was explicitly referred to as such by my children before the age of four – say the mental age of about 5 ; 6 or 6 ; 0.

Thus we find all the possible relations apprehended by the mental age of about 5 ; 0 or 6 ; 0. But two things should be noted:

(1) These were only *first* appearances, after which they were usually very intermittent until well established, when they might be used incessantly, as in the spate of 'why' questions when a child has really grasped that there are reasons and causes for things.

(2) These new mental processes arise when practical and spontaneous interests are aroused, and not in the course of formal tests – an important fact for education.

One further observation may be made as to Piaget's views. He tends to exaggerate the differences between the *type* of thought in the child as contrasted with that of the adult.

All the kinds of errors in thinking which are considered particularly characteristic of children occur also at times in adult thought, frequently in some adults, less frequently in others. I have found even graduate students who, like Piaget's nine-year-olds, will refuse to posit an incredible hypothesis for the sake of testing the formal accuracy of a syllogism¹; and as we saw in Chapter XXI even a Fellow of the Royal Society may base a generalization about a change in educational methods on his own experience when a boy and that of one or two children at the present day.

¹ *Jacquet et al. Reasoning in the Child*

To conclude, we must expect many fluctuations in the development of abilities (and in behaviour) in the early years of about five to seven, and even beyond; and we must not assume that a child is 'not trying today' if he cannot do something as well as he did a few days ago. In the nascent stages of dawning abilities or the grasping of relations between numbers he may rise for a time to a level above his present stable capacity, and then there may follow a latent period before he rises to it again, and so on till the particular function is thoroughly stabilized.

The infant's interest in the external world. It must not be supposed, from what we have said about the early appearance of the grasp of relations, that modern educational psychology suggests that early education should be more intellectual. On the contrary, we have to bear in mind not only what particular functions are developed by a given period but also what are the dominant functions, that is the most efficient *relatively to other functions at that same period* as compared with such relative efficiency at other periods. For example, a child at the age of six may be capable of beginning to reason about numbers, as well as able to observe the characteristics of animals and plants and the processes of everyday life around him; but the capacity for dealing with figures may be much greater, relatively to the other mentioned, at the age of twelve; so much so that it might pay in the long run entirely to neglect arithmetical work at six or eight, and to substitute for it more Nature Study. This is not a pronouncement of opinion, but merely an illustration of this important principle.

Experimental inquiries have shown that young children, on entering the Infant School at the age of about six, may be astonishingly ignorant concerning objects and simple ideas with which teachers are apt to assume they are thoroughly familiar, and which they are certainly capable of acquiring at that mental age. The reader may recall the large percentages of young children who have been found unfamiliar with the meaning of such words as cloud, river, sheep; and the large number of children Burt found, in London, who had never seen the sea or even a field (see Chapter XXI, p. 283). Nowa-

days, owing to the cinema and television, a knowledge of the outer world is much wider; but that is no adequate substitute for the real thing.

The average child at Infant School age. To follow the child through all the various stages of development in all the cognitive abilities – general and special – in all its interests, all the temperamental traits, and in all its social behaviour, would involve the writing of a complete genetic psychology of childhood. For such details readers must be referred to special books on the psychology of infancy.¹ Even to give a brief summary of what may be expected of a normal child of a given age is hardly possible, because of the great range of individual differences among a group of children of a given age. Thus in a group of 100 children of say eight years of age some will have a *mental age* of ten or more, some of six or less, which emphasizes the importance of testing each child when it enters the Infant School at 5 ; 0 and again when it enters the Junior School at about 7 ; 0. The individual differences are not confined to general intelligence only; they occur also in some children in the dawning special abilities and acquired skills, and especially in temperamental traits. Some general impression of age characteristics may, however, be gained by the student from average performances at given ages. Thus, as to average *mental abilities at 5 ; 0*, some clue is given by intelligence tests allocated to the age of 5 ; 0 – which means performed by about 70 per cent. of children of 5 ; 0 and by about 50 per cent. of children of 4 ; 0. For example, they should be able to distinguish 'right' from 'left', to repeat after one a simple sentence of twelve syllables, or a series of four numbers, e.g., 2, 7, 4, 9. They can define the names of familiar objects (e.g., spoon, table, chair) by *use*.² At this period general intelligence largely

¹ See *The First Five Years of Life*, by ARTHUR GREGG (1931), *Parents and Children*, by C. W. VALENTINE (McMillan, 1931), Board of Education's Report on *Infant and Nursery Schools* (1931), and *The Psychology of Early Childhood*, by C. W. VALENTINE (3rd edn., 1938).

² For further tests suitable for 5 ; 0 and later ages see the writer's *Intelligence Tests for Infants and Young Children* (1937) or *Test Book of Mental Testing for Infants*, and for a detailed study see the author's *The First Five Years of Life*.

dominates all types of intellectual processes, though special abilities for drawing or for music may begin to reveal themselves in some cases, and linguistic ability and motor activities may either of them be relatively ahead of, or behind, the general level of development.

Motor Development. The 'average' child of five can march in time to music, descend a stairway alternating his feet, can copy recognizably a triangle, and can draw a recognizable man; he can wash himself, comb his hair, and lace his shoes.¹

Adaptation. In his play the five-year-old likes to finish what he has started. He has a 'sense of time' and duration enough to follow a plot in a story and 'carry over a play or project' from one day to the next.

Sensory development at 5 ; 0 is far from complete. Care is especially needed as to eyesight, and if reading is begun large letters should be used for children of 5 ; 0 to 7 ; 0. As to hearing, pitch discrimination is weak at 5 ; 0, but rapidly improves up to seven.

Language and thought. The vocabulary is now on the average about 2,200 words. The child uses all types of sentences, including complex ones with hypothetical and conditional clauses. He can single out one word and ask its meaning. He still confuses physical causality with psychological motivation.

Piaget regards the child's thinking at this stage as 'intuitive' because not yet freed from perception.² The same beads poured from one glass into a taller and thinner one are now said by the child to be fewer because the glass is narrower, or more, because the level has risen. He cannot yet take more than one aspect (height or width) into account. We may recall the way in which the child is at first inclined to think that the number of a set of objects is altered when they are spread farther apart (see our section on 'Ability for number', p. 350).

*Social and Emotional Development.*³ Mere averages may not help much here in themselves, but they give us a guide for the

¹ As to motor development tests, see especially A. GESELL, *Mental Growth of the Person - Child and The First Five Years of Life*.

² See J. PIAGET, *Psychology of Intelligence*, p. 1.

³ I have discussed some emotional symptoms often taken as signs of abnormality in the section on 'Problem Children', p. 383.

study of individual children, when we can note in what particulars each varies from the most usual form of behaviour. We must proceed here, however, with great caution. A leading American authority, Professor A. T. Jersild, in summing up the evidence (chiefly American) on the emotional development of children, concludes: 'The data now available do not provide the basis for a systematic account of *normal and immature* emotional behaviour at various age levels.' Yet Jersild does admit some general trends:

- (1) A decrease in the frequency of overt emotional expressions with increase in mental age, at school-age level.
- (2) The substitution of language for physical expressions of anger during the pre-school years.
- (3) A decrease during the years 2 ; 0 to 4 ; 0 of fears of strange situations and persons, and of pain; but a relative increase in fears of imaginary creatures in the dark, of death, and of serious bodily harm.¹

The child of four or five is often protective towards younger brothers and sisters, or playmates. He tends to play in groups of two to five, and usually prefers it to solitary play. He will often share his possessions brought from home with others. He may defend the rights of other children, and try to comfort others in trouble. From 5 ; 0 to 7 ; 0 there is a lessening dependence on the parent and other adults, an increase in social play with other children, and the beginning of the forming of small groups.

As to social relations with adults, Katharine Bridges makes some general statements as to progress between 2 ; 0 and 5 ; 0, with which, I think, we may safely agree. The children, she writes, progress through -

'three roughly defined stages of development. In the first or dependent stage the child is somewhat *passive* and relies upon the adult for assistance and attendance. The second stage, which reaches its height between two and a half and three

¹ See chapter on 'Emotional Development' in *Manual of Child Psychology* (2nd edit., 1954).

years, is one of *resistance* against adult influence and striving for power and independence. The behaviour of the child then gradually changes from being resistive or obstinate to being *co-operative* and friendly. The desire to win approval and avoid disapproval grows. Conversation develops, and topics change from protests and wishes, to descriptions of events or actions of mutual interest between child and adult. Thus the third stage, reached usually between the fourth and fifth year, is one in which the child shows self-reliance, trustworthiness, and friendly co-operation with adults.¹

Miss Bridges rightly adds, however, that the children 'regress at times to earlier forms of behaviour'; the principle of *intermittence* of development which I expounded above applies to social as well as intellectual development.

¹ *The Social and Emotional Development of the Pre-School Child*, p. 88.

CHAPTER XXXII

MIDDLE CHILDHOOD AND ITS INTERESTS

It is significant that while there are numerous books specially devoted to early infancy or 'The Pre-School Child' and to adolescence, there are very few specifically on middle childhood, or at least labelled such. This does not mean that the child of this period has been neglected. The plain fact is that the child between seven and eleven or twelve is what we usually understand by 'the child', and books on child psychology largely have him in mind.

Much of what we have said in the chapter on 'Play' refers substantially to middle as well as early childhood, and so do many points dealt with in sections on 'Interest and Attention' and in the chapters on innate tendencies. (Of those tendencies, interest in collecting things, without a decided ulterior motive is most frequent and most intense during this period.) Some topics, however, can be more profitably dealt with here, and first we may mention briefly certain points about this period in contrast with infancy and adolescence. It should, however, again be recalled that ages and periods refer only to rough averages, and individual differences are very great. Thus the period of adolescence with the onset of puberty begins on the average about eleven or twelve for girls and about thirteen or fourteen for boys. But, as we shall see in the next chapter, there is a considerable scatter, and many children enter on adolescence one or two years before or after these ages. Furthermore, children of the age of six with an I.Q. of 140 are already superior in intelligence to half the children of the age of eight. It is for such reasons that I think it preferable to speak of 'middle childhood' rather than specify the years seven to eleven or refer to the Junior School age.

The chief characteristics of the period. Physically this period is a

somewhat more stable, consolidating period than that of early infancy preceding and of adolescence following it.¹ A more rapid growth begins again in girls about ten or eleven, in boys not until about two years later. By the age of seven the brain has almost reached adult size. By 10; 0 the brain of girls has quadrupled the size at birth; in boys this quadrupling is not accomplished till 14; 0.²

Visual and auditory sense development is substantially complete by 8; 0 or 9; 0. But great care is needed not to strain vision by small print. Discrimination of pitch continues to improve until about 11; 0. Tests of manual dexterity show marked improvement up to about 9; 0, after which improvement is not so great;³ but 'muscle sense' (those obscure sensations by which we are aware of and judge the movement and position of hands and limbs) improves at least up to 12; 0 or 13; 0; and here boys are on the average superior to girls.⁴ In all manual activities (as we saw in Chapter XV) children of this age are usually far more interested in making or doing something than in acquiring some skill.

In rote memory for words there is a steady rise from the age of 8; 0 to 12; 0. In memory for digits there is also a steady rise up to the (average) age of fourteen and a half, after which there is no appreciable change.⁵ Where, however, memory tests involve familiarity with words, or continuous prose passages, or poetry, scores go on improving into adulthood. Certainly there is no evidence that during this period of childhood 'memory is

¹ See the graph in Appendix II, p. 225 (by DR H. A. HARRIS) in the Board of Education *Report on the Primary School* 1931. It will be seen that girls for the first time equal in height and weight on the average boys at the age of 10; 0, and surpass them at 11; 0.

² *Op. cit.*, pp. 226, 238. DR HARRIS stresses the fact that the anatomical and physiological development of girls and boys differ long before the onset of puberty.

³ C. BORI, Appendix III, p. 261, to Board of Education *Report on the Primary School* 1931. This appendix gives a very comprehensive outline of mental characteristics of the period. I have selected from it a number of points for this section.

⁴ See the section on Muscle and Movement Sensations in our Chapter XX, p. 259.

⁵ See the graphs in *Child Psychology*, by F. D. BROOKS (Methuen, 1930), pp. 225, 226.

at its best'. Adults, when they think of how easily they learned poetry at school, are apt to forget how much time was allotted to that task, and how much in later life the serious practical problems of life deflect our interests and attention from learning.

The idea that memory now is at its best is also probably encouraged by the fact that, during these middle years, children do seem more willing than during adolescence to learn 'by heart' material such as arithmetic tables, geographical facts, dates, or poetry, even if the material does not interest them much. Nevertheless, at this age, as at all ages, material which is interesting is far more readily learned and retained than is the meaningless and uninteresting; and apparent fatigue in children through learning is, as with others, largely boredom. (See Chapter XVII.)

We have already quoted Burt's finding that all the essential mental mechanisms for reasoning are present by the mental age of about 8 ; o. We see, then, that at least by about the middle of the period we are now discussing (say about eight or nine) the average child is pretty well equipped with the elementary apparatus needed for most *types* of intellectual work, provided he has the vocabulary needed and that the ideas involved are within the scope of his experience and knowledge. But the teacher must constantly bear in mind the tendency for the child's thinking to be concrete, often accompanied by visual imagery, and this, and the child's restricted vocabulary, limit the possibilities of reasoning, and especially of abstract ideas.

Piaget also places within this period (seven to eleven years) the development of capacities essential for logical thought. Thus the grasping of the idea of a definitive 'class', e.g., wooden beads or brown beads, leads to the capacity for the deduction that if class A is greater than class B, and B is greater than C, then A is greater than C.¹ Only from eleven years and onwards, Piaget thinks, is the child capable of considering the form of an argument, apart from its content. But he gives little attention to individual differences; and I have found that

¹ *Psychology of Intelligence*, p. 143.

the supposing of an idea not true and concluding the formal consequence, which Piaget says appears only after this age, may appear in a few children very much earlier.

Burt's experiments support the view that genuine induction comes late. His tests on this are planned for children of 13; 0 on the average, though some much younger got them right. Burt concludes, however, that logical form is 'far less important (in determining difficulty) than either the amount or the kind of subject-matter'.¹

The suggestion based on the experiments of B. Inhelder, and discussed by Piaget, that children who have well advanced to the stage of formal operations can discover for themselves elementary laws of physics by doing experiments, recalls the Heuristic method advocated in this country many years ago but either largely abandoned or modified because of the time involved and, as some thought, wasted.

Special abilities and interests. General ability will go on increasing until about fifteen or beyond, and with it the power to grasp more complicated relationships. Thus the average child of fourteen (but not of twelve) can give satisfactory definitions of such abstract terms as kindness, pity, remorse — one of the Binet and Terman tests for age fourteen.

Some special abilities in which the child may eventually prove particularly gifted will most probably not yet have shown themselves or even matured by nine or ten. In Chapter XXIV we saw that most special abilities rarely reveal themselves in school work clearly before the age of about ten. But whatever be the facts as to special abilities, there is no doubt that marked interests (and antipathies) may reveal themselves in middle childhood, though they often seem to be only fleeting. As we have seen when dealing with school records, reports on these special interests may, in some cases, be used to indicate to which type of Secondary School — Grammar, Technical, or Modern — the child should proceed. We must, however, bear in mind that these special interests may be very changeable during this period of middle childhood and in adolescence. So far as school subjects are concerned, the interests, no doubt,

¹ *Jour. Exper. Ped.*, 1919, 5, p. 126.

may fluctuate with changes of teacher and with changes in the content matter of a particular subject.

In one inquiry I will describe, it was found that the performance in various subjects varied greatly with most children from year to year. A boy would be high in class in, say, History one year, but low in History the next year in a new class; but in Arithmetic it might be the reverse. Now we cannot suppose that his specific abilities varied so much from year to year. Hence the changes in performance (in one subject relative to others) must have been due to changing interest or attitude, or to the influence of a new teacher, or to special coaching at home in a subject in which the pupil had been very weak the year before. In the inquiry I refer to the school careers of 104 pupils in a school in the United States were traced from the third to the ninth grade — ages about nine to fifteen or sixteen.¹ The influence of a pupil's special 'abilities' (I should prefer to say 'interests and abilities') was judged by the degree of variation of his performance in a given subject from his average performance in *all* subjects. The main findings were as follow:

(1) There were great changes from year to year in the pupil's *relative* performance in most subjects (compared with his average performance), except in spelling and problem arithmetic. The latter, as we know, is largely dependent on general ability.

(2) About 36 per cent. of the pupils who claimed a subject to be their 'best' were actually in that subject *below* their own general average for all subjects: apparently 'doing best' was confused with 'liking best'. (This, of course, would not be likely to happen in classes and subjects in which there were frequent tests, the results of which the pupils knew.)

(3) There was a tendency for a pupil with a subject much below his general average in one year to improve in later years through working harder at that subject.

(4) Nevertheless, 'profiles' (given by the positions in each subject) became less level as the years passed.

¹ See 'The Development of Special Abilities at the Junior High School Age', by G. E. SLESSER, *J. of Educ. Research*, September 1926, 40.

(5) Total achievements, on the average of all years, were estimated to be due to the extent of 60 per cent. to a general factor (of ability or interest) and 40 per cent. to special abilities (or interests).

It is clear that in this research the investigator did not seek to separate 'special ability' from interest in, or concentration on, a given subject at a given time. We must not forget all these factors in considering our next topic.

Interests as revealed in preferences for school subjects. In considering records of the popularity of school subjects we must bear in mind several things.

(1) The general method of teaching various subjects varies greatly from period to period and from teacher to teacher. I can illustrate from my own experience the influence both of the teacher's personality and of the general method of study. First, as to method and material: at the age of thirteen I greatly liked Geography because, as taught in my class at Nottingham High School, it involved a good deal of careful map drawing, which I loved, and the material we were expected to learn was presented concisely and systematically, and was limited enough to be mastered pretty thoroughly. At fourteen, however, I was moved to a school elsewhere, and here Geography consisted largely in learning large numbers of marked passages (especially imports and exports of most countries of the world) in a huge Geographical text book (Gill's) – excellent in itself, but giving far too much material for us to hope to master. I now disliked Geography thoroughly except when studying maps.

In History also the method and substance may make a great difference to its popularity and even comprehensibility to children. The early understanding of time concepts is probably overestimated by many teachers.¹

We have seen in an earlier chapter that the popularity of the teacher is not usually the dominant factor in interest and

¹ See the helpful study on 'The Growth of Knowledge of Time in Children of School Age', by N. G. BRADLEY, *B.J.P.*, 1947, 38. Figures are given for ages six to thirteen.

curiosity. The possibility, however, in some cases of the great influence of the teacher's personality I can illustrate also from my own study of Latin under two masters at the same school — again Nottingham High School. At about thirteen I was in a Latin class taken by the Rev. T. B. Hardy,¹ a man who impressed even my boyish mind with his devotion to work, his sympathetic, conscientious, and just, yet firm dealing with us boys. Our Latin was mere exercises and learning grammar by heart, yet I remember loving it. Then I was moved up into a class taken by a man who became violently angry when we made mistakes in translation and I was in a constant state of anxiety. Certainly I should have put Latin near the bottom of my list that term.

Where, however, an inquiry as to the popularity of subjects is carried out among many different schools and thousands of pupils the individual characteristics of exceptional teachers are swamped in the mass; a decided change in the average positions of subjects after a period of years is likely to show a change in organization and methods of teaching.

(2) A second point to bear in mind is that if a subject is placed on the average, say, sixth out of twelve by pupils of ten it remains possible that it is first or second with some pupils and eleventh or twelfth with others. Usually we can state only general trends.

The earliest inquiry on a large scale in this country as to the relative popularity of school subjects was made by E. O. Lewis and published in 1913.² It covered 8,000 pupils (ages seven to fourteen), of whom 6,000 were in London schools.

Among the boys of Standard V (ages about ten and a half to eleven), Manual work came first, then Drawing, Science, and Arithmetic. Scripture and Recitation were bottom. Among the girls Needlework was first, Science and Arithmetic bottom. Lewis emphasized the great individual differences among the

¹ I am not quite sure of the initials. Hardy became a padre in the war of 1914-18, won the V.C., and I believe was awarded it a second time posthumously.

² See his article in *J. Educ. Ped.*, 1913-14, 2, p. 80. I have already referred to it, Chapter XV, p. 190 and Chapter XVI, p. 203.

pupils. Thus Arithmetic was either very high in a list (usually a boy's) or very low (more frequently a girl's). Reading, Recitation, and Drawing were also frequently either very high or very low on a list.

Now consider a much later inquiry, made by Burt, about 1925.¹ There is now a greater variety of subjects and much change of content and method in the subjects after an interval of about thirteen years. Burt's lists are given for three ages — seven, ten, and thirteen; the last will be useful when we discuss adolescence in the next chapter. In Table VI I have grouped the boys' lists and in Table VII the girls' lists, and print the names of the subjects in order of preference to bring out the changes with age. I have put arrows to mark a change of more than two places.

From seven to ten in boys the most notable changes are: (1) a rise of nine places for Geography, and of four places for Nature Study; (2) a drop of seven places for Dancing, of six places for Scripture, and four places for Singing. This gives food for reflection to the teachers of Scripture (especially as Scripture remains bottom at thirteen) and raises the question as to whether Geography (*as then taught*) was not begun too early.

Changes from seven to ten in girls. (1) Again Scripture drops, but not so far with the boys. History comes down to 10 instead of rising as with the boys. Geography does not rise markedly as it did among the boys. On the whole, there are fewer decided changes among the girls than among boys from seven to ten; but more between ten and thirteen, due no doubt to the earlier onset of adolescence in girls.

A later and more detailed report on the popularity of school subjects in Elementary Schools was given by one of my research students, Mr J. J. Shakespeare.² The report covers the votes of over 9,000 pupils of ages ten, eleven, twelve, and thirteen in Worcestershire schools. As there are no records for children

¹ See his memorandum in the *Report on the Primary School* (1931), p. 278. Sir Cyril Burt tells me that these results were first presented in a Report to the L.C.C. dated about 1926.

² In *B.J.E.P.*, 1936, 6. I have already referred to this inquiry in Chapter XVI, p. 202.

TABLE VI (BOYS)

School Subjects Arranged in Order of Preferences - Burt's List for London Children (Year 1925)

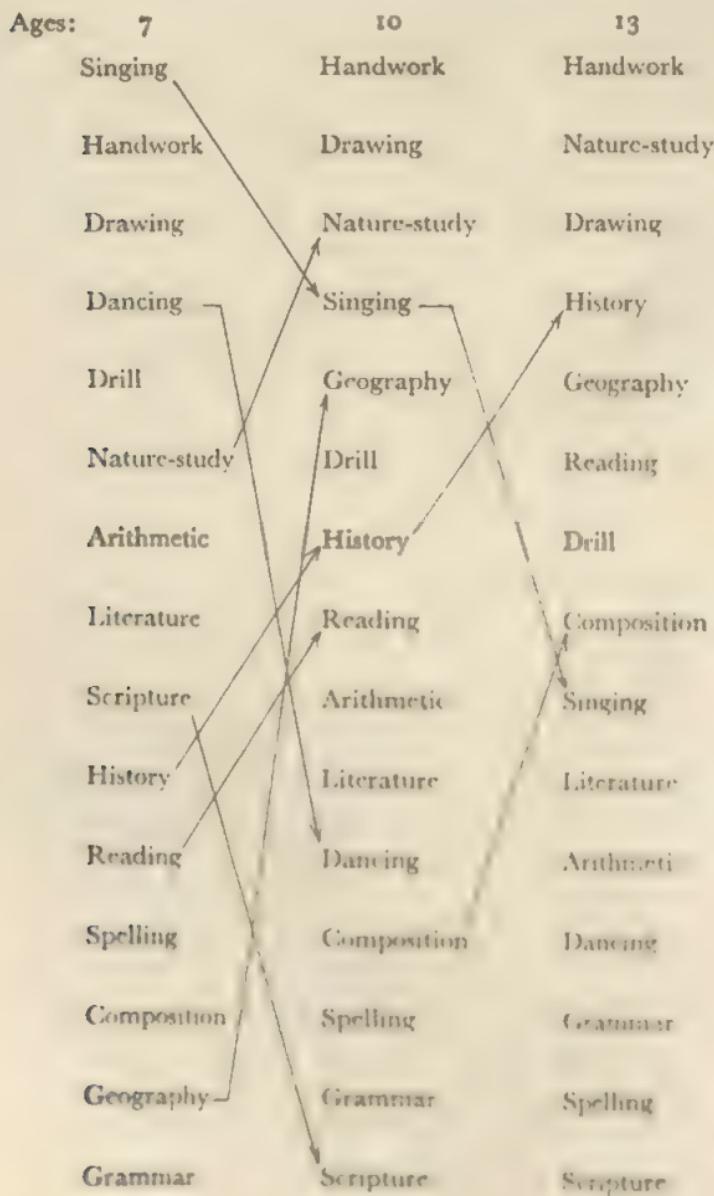
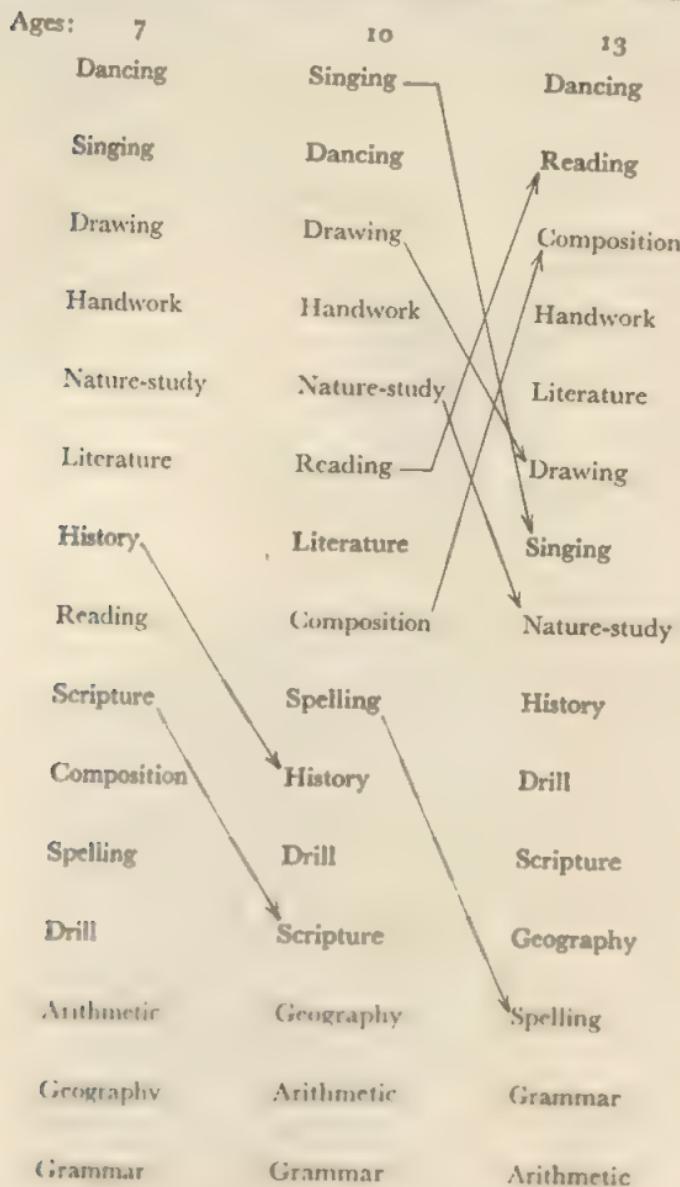


TABLE VII (GIRLS)
School Subjects Arranged in Order of Preference (Year 1925)



under ten, the report is of interest for our present purpose chiefly for comparison with Burt's earlier London results. The main results are shown in Table VIII.¹ The marked changes in the position of some of the subjects as compared with Burt's list may be due to: (1) changes in the content and in the method of presenting the subject; (2) environmental differences: thus the greater popularity of 'Physical Training and Dancing' in Worcestershire as compared with 'Drill' and 'Dancing' in London may, Mr Shakespeare suggests, be due to the greater opportunity for open-air activities.

For boys on the whole the order is remarkably similar to the London list of 1925. Handwork, Art, Science, and Singing still lead the way. Grammar has dropped out of the school curriculum, but Spelling and Scripture still come at the bottom of the list.

Among girls the chief differences are as follow: Reading and Arithmetic are much higher than they were in the London list of 1925. 'Drill', which was last but four, has disappeared as a title and as 'Physical Training', blended with Dancing, takes a much higher place.

I should like to emphasize that no notice need be paid to small changes of one or two places; for in some cases the difference between the average orders is very slight.

Again we must recall that these are averages. Mr Shakespeare remarks that Scripture, though very low on the average, was given by a small number as a greatly liked subject. Art and Physical Training were seldom disliked but rarely placed first in order.

As mentioned in Chapter XVI, Mr Shakespeare obtained separate results in some schools for '*a*' bright and fast classes and '*b*' dull or slow classes. For boys and girls of eleven years the orders for '*a*' and '*b*' are substantially the same except that Arithmetic is much more popular with bright pupils (both

¹ In the girls' list Needlework and Domestic Science come first but are omitted, as they are not in the boys' list. The following are the results of each subject in the average order of orders on the girls' list. If the girls' averages are compared with the boys' we find that in each case the two first subjects in the girls' list are omitted. Their averages are: Needwork 5·41, Physical Training 5·42.

TABLE VIII

Order of Preference for School Subjects in Worcestershire Elementary Schools, 1935

Boys, age 10		Girls, age 10	
Handwork	5.15	Physical Training and Dancing	6.13
Art	5.19	Reading	6.61
Physical Training	5.83	Music and Singing	6.67
Science	5.93	Handwork	6.69
Music and Singing	6.65	Art	7.11
Reading	6.74	Science (Nature-study)	8.12
Arithmetic	7.45	Arithmetic	8.92
Literature	7.96	Hygiene	9.35
Hygiene	8.48	Literature	9.46
History	8.49	Scripture	9.51
Geography	9.25	Composition	9.91
Composition	9.66	History	9.95
Poetry and Recitation	10.09	Geography	10.31
Spelling	11.51	Poetry and Recitation	10.91
Scripture	11.61	Spelling	12.88

boys and girls) and composition is much more popular with the bright pupils among the boys.

'Achievement' seems to be relatively a more important thing for pupils of ten and eleven than either before or after those years, as was shown in Table II, already given in Chapter XVI, p. 203.

In summarizing the results of his inquiry, Mr Shakespeare emphasizes two special points:

(1) The need for perceptible results as a motive for children of about 11; o.

(2) The special popularity of subjects which permit bodily activity of the pupil.

Individual differences in school interests. Before leaving this question of the varying popularity of School subjects I wish to stress a point already mentioned, namely, that these orders only express averages, and that a subject placed near the bottom on the average may be liked best by some pupils. Some precise figures on this point are given by Miss E. B. Warr.¹ From 1,042 pupils in Primary Schools she obtained answers to these questions: 'What is your favourite subject or occupation in school?' and 'What subject do you like least in school?'

Unfortunately there were only 117 boys among these pupils, and Miss Warr does not give separate figures for these. However, some important facts can be gleaned. Thus, Arithmetic was the best liked subject by 13 per cent., but the least liked by 18 per cent. (at 7; o the figures were best liked by 20 per cent., least liked by 22 per cent.), confirming the observation of others that Arithmetic is specially apt to enlist either great keenness or great antipathy; contrast it, for example, with History, which is only put first by 3·3 per cent., yet last by only 2 per cent. Even Handwork, put first by 35 per cent. of the children of nine years of age, is put last by 3 per cent.

The importance of precise description of subjects, in all discussions about this popularity, is brought out by Miss Warr's remark that Science as 'Nature Study' is among the favourite

¹ In *The New Era in the Junior School*.

subjects at nine to ten, but when it becomes 'Science' at ten to eleven it is unpopular. 'Handwork' is liked least only by 0·8 per cent. of all pupils, yet 'Needlework' (which might in some cases be classed with it) is liked least by 12 per cent. of those taking it.

Interests revealed by questions. Some results gathered by Miss Warr as to the questions of children of ages seven to eleven have already been given in Chapter XVI, p. 197. Here I should like to stress one general observation made by Miss Warr and supported by another investigator, Mr H. R. V. Ball, who made an analysis of questions which children in Junior Schools said they would like to have answered.¹ Two thousand questions written by four classes of eleven-year-olds and three classes of younger children were classified. Both Miss Warr and Mr Ball remark that the children of these ages show little curiosity about what had been taught in school. They both conclude that the ordinary curriculum should be made to fit closer to the child's spontaneous interests. Nor is it safe to make assumptions at this age about the appeal of utility. Mr Ball writes, "The girls' questions show little sign of interest in 'Home Physics'. Up to twelve at any rate, they are much more curious about the sky than the scullery." It is indeed, as Professor A. N. Whitehead long ago maintained, the age of an interest in the 'romance' of science, preceding that of 'precision' and 'generalization'.²

Some out-of-school interests – Reading. A number of investigations have been made as to children's reading interests. They mainly confirm what many observant teachers will have noted if they have dealt with school libraries adapted for the interests of children. Wide generalizations, however, are difficult to make because so much depends upon local conditions; for example, a school or town library well stocked with childrens' books. Furthermore, investigators classify books and periodicals differently, and so get different results.

An inquiry among over 3,000 children (about half of them boys) in the Senior Schools of Ilford, revealed the following

¹ See *The School Science Review*, March 1936 and June 1936, 17.

² See his book, *The Aim of Education* 1929.

results.¹ As to *magazines*, 'Bloods' or 'Comics' were read regularly by 90 per cent. of the eleven-year-old boys, and 80 per cent. of the eleven-year-old girls, 'bloods' being more popular with boys and comics with girls. Girls rarely read boys' 'bloods'.²

Summaries of other inquiries reveal that girls of the ages of ten or eleven already show more interest than boys do in stories of home life and in romance. At about eleven years some boys begin to show an interest in science, and the interest in animal stories declines.

As many biographies show, the really keen reader, even in middle childhood, will plough through almost anything if nothing more attractive is at hand. And it is notable that one inquiry showed that in some cases an adult's own likings are better clues as to what children will like than are that same adult's ideas as to what are *suitable* for children.

Interest in the cinema. It seems useless to give the earlier reports of attendance at the cinema, as these have been so much affected by the advent of Television, especially among young children, though a recent inquiry on T.V. (discussed in the next section) shows that many older children, especially girls, prefer the cinema 'where you can sit with boy friends you can't have at home'. But in considering the time stolen nowadays from more useful pursuits it is well to reflect that T.V. has reduced visits to the cinema. One inquiry in 1948 showed that among senior school children of 11; 0 about one-half went to the cinema once a week and nearly a quarter twice a week or more.³

In considering children's preferences for films, one has to bear in mind local possibilities, and special catering for children, and the choice of parents when children are taken with them. As to their influence on young children, there is evidence that they may affect ideas as to customs, morals, dress, and so

¹ See *The Leisure Activities of School Children*, by MARY STEWART (W.L.A., London, 1948).

² Mrs. Stewart points out (p. 15) that A. J. JENKINS, in his book, *What Do Boys and Girls Read?* included under 'Boys' such titles as *The School Girl's Own*, and so got much higher percentages for 'bloods'.

³ Mary Stewart, *op. cit.*

on; and in some cases they may set up at least temporary fears, though the trend of opinion is towards the view that it is merely pre-existent tendencies to certain fears that are accentuated by some films. As to educational films, the child's natural interest in seeing things happen could be more utilized in schools if the equipment were provided, especially in Natural History, Geography, and Drama.¹

We shall discuss the cinema more fully in Chapter XXXIV on Adolescence.

Radio. Television has affected radio even more than it has the cinema. The report dealt with in our next section shows that children who have T.V. in the house rarely listen to the radio. In her Ilford inquiry, Mrs Stewart found that about 97 per cent. of the Senior School children listened regularly to the radio. Less than 1 per cent. mentioned 'Talks' or 'News' as items they listened to 'regularly with pleasure'. 'Light Music' was mentioned by about 3 per cent. of boys and 8 per cent. of girls, but Symphony Concerts by less than 1 per cent.²

Among the Grammar School pupils of 11 ; 0, Mrs Stewart found that News and Talks were mentioned by only 5 per cent. of the boys, and by none of the girls.

Much more extensive inquiries as to radio listening have been made in America, an admirable summary of which will be found in A. T. Jersild's *Child Psychology* (p. 496), already referred to. Some notable findings, as to children of ten to twelve, were the following:

(1) Some items specially planned for children were very low in the order.

(2) Often it appeared that the radio was listened to only because there was nothing else to do; for example, in one inquiry very few children said that radio listening was what

¹ On the Educational use of films see *The Cinema in Education* : Report of Cinema Committee of Inquiry, edited by Sir JAMES MARCHANT, 1925. For a critical examination of the value of some evidence in favour of instructional films, see Dr S. J. F. PIMBRETT's article, *B.J.F.P.*, 1945, 15, p. 57.

² For further details see Table IV in MRS STEWART's pamphlet on *Leisure Activities*.

they liked to do best out of school, though most of them spent a lot of time listening.

Jersild, who made a special study of children's fears, reports as to the effect of the radio on fears, much the same that was found about the cinema. In some cases fears are 'related specifically to some radio programme'. But when children are asked simply to tell their fears or unpleasant dreams, radio programmes are mentioned by 'a smaller number of children', and then only as one of a large number of influences that contribute to fear.¹

Television. The recent comprehensive report on Television² refers to children of ages ten to eleven and thirteen to fourteen. The latter should be dealt with in our chapter on adolescence, but it is much more convenient to consider them together with the younger children. There were 1,854 viewers and the same number of 'controls' studied, the latter being paired with viewers of the same I.Q. and similar homes and school classes, all in London and three other cities.

Perhaps the most important finding for teachers is that concentration on school work was not affected, judged by teachers' estimates of the actual work of viewers and controls, though half the teachers, when asked their general opinion, thought that television seriously affected tiredness and concentration. One-third of the thirteen to fourteen-year-olds were still viewing after 10 p.m., but the average bedtime of viewers was only twenty minutes later than that of the controls (p. 27).

Nor did the viewers fall behind in school work, except the brighter children (in both age groups), who fell slightly behind. The authors point out, however, that their inquiry came before the filling by T.V. of the gap between six and seven-thirty, which may now affect more homework. About 60 per cent. of 'viewers' were made by their parents to do their homework before watching T.V., but 19 per cent. of Grammar School viewers (thirteen to fourteen) said they sometimes did their

¹ *Op. cit.*, p. 503.

² *Television and the Child*, by HILARY T. HIMMELWEIT, A. N. OPPENHEIM, and PAMELA VINER. Oxford Univ. Press, 1955.

homework in a room with T.V. on, and an even greater proportion of viewers did so with the radio on (p. 306).

Generally, the higher the intelligence of the child, the less time he spent in viewing, the all-over average for which was two hours a day. Grammar School children proved the least interested in T.V., but the effect of greater intelligence showed itself in the Junior School also.

Murder and Crime thrillers (very popular) were often frightening and disturbing to sleep, but reprimand and ridicule shown on the screen sometimes caused more unease than physical aggression.

Children with access to the T.V. listen very little to radio. At first their book reading is reduced, but later it is restored, the duller children reading even more than before.

Much viewing seemed to be simply for lack of something better to do. Where there was a choice between sports or hobbies and viewing, T.V. often lost. Extreme addiction to T.V. seemed a symptom of maladjusted personality, rather than a cause. Nor was T.V. thought a substantial cause of delinquency.

On the other hand, television appeared to do little to improve general knowledge, except among the young and duller children. Finally, the need for guidance and criticism in the choosing of items by parents and teachers was stressed.

Social behaviour and the development of personality. Considerable changes take place during middle childhood in social behaviour. Numerous reports have been made on them, many confirming what the experienced teacher must have noted if he has not neglected to observe what goes on in the playground and playing field.¹

The child gradually becomes less of an individualist. At about six or seven he tends to play only in small groups. By eleven or twelve he can take part in team games. If one watches boys of about nine or ten taking part in a game of cricket one

¹ Useful summaries on this topic will be found in *The Manual of Child Psychology*, p. 194b, especially the articles by VERNON JONES on 'Character Development', and by A. T. JERSILD on 'Emotional Development' (latter part).

will often notice individuals neglecting the team interests. A fielder may seize a bat and have a separate little game with another fielder while the main game is in progress, until shouted at for neglect of fielding duties.

At six or seven there are only leaders of small groups; by eleven we find class as well as group leaders. The group or 'gang' becomes more and more important during this period, and the normal child hates to feel alone. Sometimes there are rival gangs, and sometimes a group of pals may be antagonistic to individual children and cause much distress.¹

The grouping of friends in a class and the isolation of a few pupils has been studied by the following method. The children are given papers with such questions as the following to be answered: (1) Whom would you most like to sit next to in class? (2) Whom would you choose as your best friend if you could have only one? (3) Whom would you choose first to play with after school?

From the answers can be found the very popular boy, often chosen, and the isolate, chosen perhaps by none. The results often show also close groups, who choose one another.¹

At about eight or ten the sexes tend to separate more in their play and the groups become usually single sex. Boys love rough competitive games such as football, or mock fights, 'bobbies and thieves', and more adventurous sport generally. Girls play at 'school' or families, and milder games of skill. Girls are generally less pugnacious than boys; self-assertion tends to take the form of (or be replaced by) self-display, finding satisfaction in dressing up, acting, or dancing.

The collecting impulse is prominent especially about the middle of this period, and could be used more for educational purposes. Constructive impulses, too, are well to the fore; boys delight to make things with tools, and to take to pieces toy engines or electric bells, and to try to put them together again; girls love to make dolls' clothes, or knit and sew things for themselves. In these constructive activities the interest is in

¹ For a fuller discussion of the method and a Sociogram, from which can be drawn to show the results see my book *The Normal Child* (Pelican Books, 1957), pp. 188 ff.

making something rather than in acquiring a skill. Indeed, the primary interest in making the thing remains dominant well past this age.¹

The love of exploring and wandering develops markedly. Wandering and truancy, Burt reports, are the commonest delinquencies at about nine, though this is no doubt due partly to the greater freedom given the child who is no longer taken to school by a parent.

Another tendency which is apt to cause trouble in the school is obstinacy, which is marked in some children early in this middle childhood period. Among certain groups of difficult children it was found that obstinacy showed a marked drop in frequency at eight to ten, and little increase at ten to twelve. There was, however, an increase in boastfulness at eight to ten and a still greater increase at ten to twelve.² Disobedience, on the other hand, like obstinacy, was found rather less in the period eight to thirteen in an inquiry covering 12,000 pupils, ages six to sixteen, the peak ages being seven and fourteen.³ From various tests in the United States to detect the tendency to petty cheating or cribbing, it appeared that there was little improvement on the average from the age of seven to fourteen.⁴

Changes from year to year in middle childhood. An attempt has been made to specify the characteristic traits and behaviour of each of the years from five to ten.⁵ This, however, is exceedingly difficult, if not impossible, with our present knowledge, because the differences between individual children at, say, eight, in behaviour and disposition, are probably much greater than differences between the averages at seven or nine. My own day-to-day observations and records of five children from birth to adolescence convinced me that individual differences in disposition and character between children, even of the same family, at the same age of, say, six or seven may be much

¹ See Chapter XV, especially pp. 189-191.

² *Handbook of Child Psychology* (2nd edit., 1933). Article on 'Social Behaviour', by CHARLOTTE BEHIER.

³ See A. HABERLIN, *Beib. Schweiz. Z. Psych. Anwend.*, 1953, No. 23.

⁴ See *Manual of Child Psychology*, pp. 718-19.

⁵ See *The Child from Five to Ten*, by ARNOLD GESELL and FRANCES L. ILG (1946).

greater than the difference between the same child at six as compared with even nine or ten.¹ These great individual differences are not, however, the main difficulty in establishing norms of social or emotional development. After all, individual differences in general intelligence and special abilities, at any one year, are also much larger than the difference between the averages for successive years; but that does not prevent us from specifying characteristic differences, and awarding a mental age. No doubt fluctuations in behaviour in one individual are much greater than changes in abilities; but the chief difficulty with behaviour is that we cannot conveniently measure the changes quantitatively, except as to a few extreme types of conduct. In principle, when our knowledge and technique become more precise it should be possible to give a child a 'mental age' for emotional and social development.

Unfortunately, in the attempt referred to above Gesell and Ilg do not give percentages of the frequency at different ages of various traits in types of behaviour, or of variations of degrees within a given age. Their main point seems to be that most children – at varying ages – pass through the stages indicated, and sometimes seem to regress, and their results suggest that the average eight-year-old is more like the average six-year-old than the average seven-year-old, which is hardly credible.

On the whole we must, I think, admit that at present we do not know enough about individual changes from year to year to generalize about the main characteristics of, say, the nine-, as compared with the eight-year-old; though we can distinguish the behaviour of the mass of ten- or eleven-year-olds from that of the six- or seven-year-olds. Most confidently of all we can say that personality or temperamental differences between individuals of the same age may be much greater than any estimate of average differences between two groups separated by two or three years of age.

Tests of character development. The difficulty I have mentioned

¹ In a study of preschool children with specific reference to sympathetic responses it was also found that individual differences in personality were more important than the factor of age. See Chapter on 'Emotional Development' by A. T. JERSILD in *Manual of Child Psychology*, p. 723.

of finding norms for various ages in personality and character traits is not so great when we consider only specific tests of character. Ingenious tests have been devised in which children have opportunities of cheating in school work or in homework, or in athletic contests and games, and in which the cheating can be detected.¹ Some of these have correlated as much as 0·6 with teachers' estimates of the traits, but others much less. In general, the results indicate how specific the responses are to the various situations. The child who cheats in school work may not do so in games, and so with stealing or lying. This fits in with our earlier emphasis on the specific nature of personality traits in early childhood (Chapter XXV) and for the need of maturer general ideals or principles, if conduct is to be harmonized and character unified (Chapters XII and XIII).

In the tests just referred to in a footnote, applied to gifted children by Terman, it was found that on the average the gifted children of nine years realized a level corresponding roughly to that of unselected children of fourteen, though one in five of the gifted children showed more faults than the average. The gifted children exceeded the average most in tests of 'will and perseverance', and least in 'sympathy and tenderness'.

The development of ideas as to conduct and morals. The important place of the growth of sentiments in early moral development has already been discussed in Chapter XIII. Here we confine ourselves to the growth of ideas. We may begin by reference to some of Piaget's ingenious investigations.² He began by inquiries in children's ideas as to the rules of playing the game of marbles. He found several stages.

(1) An ego-centric stage (before the age of about seven) when the child, though he may wish to play with other children, does not wish to surpass them.

(2) From seven or eight onwards when the child *co-operates* with others in playing, by trying to beat them.

¹ A description of a variety of such tests will be found in R. B. GARRELL's *Guide to Mental Testing*, 2nd edit., 1948, p. 222. A summary of main findings is given by A. T. JERSILD in his *Child Psychology*, 3rd edit., 1947, pp. 451 ff.

² See his book *The Moral Judgment of the Child*, London, 1932.

(3) Up to ten the rules are regarded as 'sacred and untouchable'. From eleven onwards it is realized that the rules are due to mutual consent, and so changeable.

As to children's ideas about duty and right and wrong, Piaget found a first stage in which these depend on the dictates of a person the child respects. Up to seven or eight 'whatever conforms to the dictates of adult authority is just'. Then comes the stage when the child no longer merely obeys the commands given by an adult, but obeys the rule itself, generalized and applied in an original way. Thus lies, which tend to be regarded as wrong when told to adults, come after eight or nine to be recognized as bad when told to other children (*op. cit.*).

At eleven or twelve Piaget found a new attitude appearing in moral judgements, namely, 'taking into account extenuating circumstances'. (Surely we find this much earlier in some children.)

Developments during middle childhood in children's ideas as to right and wrong and the influence of environment on them are clearly exemplified in an inquiry by Eve Macaulay and Stanley H. Watkins among 2,150 children, ages from 7 ; 0 to 18. Of these 420 were in schools in a slum area labelled (A), 416 in a semi-slum area (B), 434 in a good artisan area (C), and 563 were in Grammar Schools.¹ The inquiry was admirably conducted; the children were told not to write their names on their papers. They were simply asked to 'make a list of the most wicked things anyone could do'. To the very young children it was explained that a person was 'wicked or naughty' when they 'did something they shouldn't'.

The authors do not give precise statistical results; for they explain that in some cases the young child was clearly merely repeating words he had learned, e.g., from the Commandments: false witness or 'falsters', or adultery or 'dudilts'; and the authors drew a clear distinction between these cases and such a statement as 'telling things that are not true to get someone into trouble'. But a careful examination of the answers

¹ See *The Forum of Education*, 1926, 4, p. 13.

clearly revealed some general tendencies, and they form an interesting supplement to Piaget's findings.

Up to about 9;0 the child apparently lives in a small world of immediate personal relationships. He merely states as offences those small personal acts which he has been taught to consider wrong by parents or teachers. Typical lists were:

A (boy, seven years). Kick, steal a ball, kill a man, steal apples, steal oranges, bite, steal a piece of chalk, spit.

D (boy, eight years). Not to go to church, not to say your prayers, to be rude to mother, to do tortures.

E (girl, eight years). Put on the lights, roar in the corridors, believe in Satan, throw paper on the floor, I must not lie on the wet grass, disturb mother.

Between nine and ten begins a further stage of development. (1) Instead of merely 'particular offences' we find 'generalized conceptions', such as 'stealing', 'fighting', 'murder'. Also (2) the stage is marked by an 'extremely conventional conception of moral offence': the child is as yet uncritical, just as Piaget's children up to ten were quite uncritical about the rules of a game. (3) Most offences mentioned now are no longer such as have any personal significance for the child. (4) There are signs that the influence of the 'teacher' is beginning to supersede that of 'mother'.

Variations in ideas of right and wrong with the social grade of the home. The influence of social environment is clear in the lists given by Macaulay and Watkins. The slum child by his concrete examples reveals his first-hand knowledge of the 'wicked things' he mentions: e.g., a girl of nine refers to 'a man going in a room to a girl in the night', whereas the Grammar School child who refers to 'adultery' generally couples it with other extracts from the Ten Commandments. The slum children seldom mention such offences as 'selfishness' or 'not helping others' which appear in the lists of children in homes of a higher grade. The Grammar School boy lists 'arson' and 'burglary' with 'blowing up bridges' and 'being a pirate'; the slum child talks of 'smashing windows', 'breaking lamp-posts', 'robbing barrows', and 'picking pockets'. Small personal offences (kicking, biting, scratching, pulling hair, spitting) are

more frequently mentioned by the slum children. Thus, of children up to nine the percentages who mention one or more of these are as follow:

School A	School B	School C	School D
100	86	23	6

The 'wickedness' of lying appears in a different form, too. It is 'telling tales' that occurs to the slum children; to others 'breaking your word' is the offence.

In the Elementary Schools the youngest girls (seven to nine) usually ascribe the crimes mentioned to boys. They 'break things', 'put out their tongues at ladies', 'steal', 'swear', 'won't go errands when mother tells them', and so on. Girls of those ages of the Secondary Schools refer to *themselves* as doing wrong, and largely to little home and school offences. Thus, girl (eight), lists: 'climb trees, tear my frock, I must not pull pussy's tail, not to obey mother, to tell a lie'.

Summing up as to the period of middle childhood, I may quote these authors' general conclusions. Up to about nine years some of the misdeeds are largely minor offences against individual persons.

'From nine to adolescence the conventional morality of his world is the keynote of the child's attitude; he believes firmly that what society calls black is black, allowing of no reservations. He apparently never dreams of expressing a personal opinion on the subject, much less of criticising in any way the judgements of society' (p. 32).

Here again, however, we must stress the wide range of individual differences as to ideas of right and wrong among children of the same age, even among young adolescents. Thus, Vernon Jones presented descriptions of childhood situations to 177 American children in Grades 7 and 8. They were to mark the action in each situation as 'right', or 'excusable', or 'wrong'. In only nine situations out of sixty-four did as many as 90 per cent. of the children agree in their labels.¹

¹ See article on 'Character Development' in the *Manual of Child Psychology*, p. 738.

Children's ideal persons. It has been found by several investigators that most children of seven or eight choose, as the person they wish most to be like, one in their immediate circle — a parent or a friend. As age increases to twelve or thirteen this percentage greatly decreases, and most children now choose their ideal from among historic or public characters, or from fiction.¹ This is understandable because of the increasing knowledge about such characters. But there is one striking fact that emerges, namely, that girls (including adolescents) choose their ideal person from their immediate environment more than twice as often as do boys. Girls also choose male characters as ideals more often than boys choose female characters.²

Children's ideas as to punishment. An extensive inquiry in the country on this topic was made by the late Major K. D. Hopkins.³ He put before over 2,600 pupils of ages eight to sixteen three imaginary cases, of the boys Dick, Harry, and Tom, in different schools who were caught cheating. Dick was talked to privately by his teacher, who pointed out how wrong it was and how he would never do well at his lessons if he cheated. Then he sent him out to play. Harry was scolded by his teacher before the class, who were told what a mean thing Harry had done. Tom was given a good caning. A few days later *one* of these boys was caught cheating again. The children were asked to say which boy they thought it was and why; and whose teacher they would like to teach them.

The majority of the children from eight to eleven thought that Dick would be the one to repeat the offence. I give the figures for boys and girls, and include those for adolescents for the sake of comparison.

Corporal punishment was thought the most effective by pupils below the age of twelve. Among boys of 10; 0 only 19

¹ See E. M. MACAULAY's article in *The Forum of Education* (1925), 3.

² See A. T. JERSHED, *Child Psychology* (3rd edit., 1947), p. 457.

³ See his article, 'Punishment in Schools', *B.J.E.P.*, 1939, 9. Major Hopkins, who had been one of the most outstanding of my research students, died in a prisoner-of-war camp. His zeal for research was shown even then, when he made a great collection of dreams of his fellow prisoners and corresponded with me about them.

per cent. thought it a failure, but at 15 years 51 per cent. thought it a failure.

Percentage of Children Thinking that Private Reproof and Explanation would be Ineffective without Punishment

Ages	8+	9+	10+	11+	12+	13+	14+	15+	16+
Boys	50	61	60	59	47	40	27	23	28
Girls	47	66	69	55	47	37	16	16	14

In another query pupils were asked what the boys felt like after the punishment, and there was no evidence that corporal punishment 'evokes that feeling of physical and spiritual degradation that some of the more enthusiastic opponents of the practice assert' (p. 17). Of 300 children who were asked which punishment they would choose of (a) two strokes with the cane, (b) 500 lines to be done at home, and (c) a half-day's detention at school, 90 per cent. of the boys and 37 per cent. of the girls (but none over 15; 0) chose the cane, chiefly because it was 'quickly over'. Only 10 per cent. of the boys but 60 per cent. of the girls chose the lines.

A widespread inquiry as to punishment is reported by the National Foundation for Educational Research.¹ It dealt with over 7,000 children, ages eleven to fifteen, in all types of schools, about one-third being in Grammar Schools. Again this overlaps with adolescence, but I give the results in this chapter as they are massed together.

First, we may say that the teachers were overwhelmingly against the compulsory abolition of corporal punishment, as a last resort or for certain offences. This was found even among heads of schools where it had been voluntarily abandoned. It was held that there must be a gradual evolution from repressive to freer discipline.

The pupils were asked which of fifteen punishments they 'disliked most' and which least, and to number them in the order in which they were disliked. The median orders found

¹ See *A Survey of Rules and Punishments in Schools*, by M. E. HIGHFIELD and A. PINSENT (Newnes, 1952).

for the various punishments were as in Table IX. The punishment most disliked by boys (or girls) comes at the top of the table, that least disliked at the bottom. Readers unfamiliar with the term 'median' may take it as meaning the middle rank of all the ranks given for a particular item.

TABLE IX
Punishments Disliked Most

Punishment or deterrent	Median ranks	
	Boys	Girls
An unfavourable report for home	3	3
Deprived of games or some favourite lesson	4	6
Being regarded as a person to be closely watched by the staff	5	5
Given cane or strap	6	4
Sent to Head for misbehaviour		6
Made to look foolish in class jokingly		10
Made to look foolish in class sarcastically		7
Made to report daily to Head because of poor work or behaviour	8	5
Given detention after school	9	11
Given extra work to do to make up for unsatisfactory work		
Given a good talking to in private	9	11
Given a cuff or a slap by the teacher in passing	10	10
Sent from the room for misbehaviour	10	8
Suspected of slacking and urged to make an effort	11	11
Threatened with punishment	11	11
	12	12

The most notable differences between the boys and the girls are that the girls dislike: (1) being reported to the Head daily, and (2) corporal punishment more than the boys do. Estimates of averages are, of course, not the whole picture, and it is worth adding that 25 per cent. of the boys dislike corporal punishment most, while 25 per cent. of them gave it a rank below 11.

In the same schools the Heads and Assistants were given the same lists of penalties and asked to number them in order to show which they thought 'most essential for preserving a good balance between discipline and freedom' in the school. Here very different lists appeared from those of the pupils. All four groups of staffs - Headmasters, Headmistresses, Assistant

Masters, and Assistant Mistresses – put first 'Given a good talking to', second came 'Given extra work to do'.¹

Incentives in school. The same pupils were also given a list of rewards or incentives and asked to number them in order, showing which they would like most to happen to them, and which they would care about least. The median orders were as follows:

TABLE X
Order of Effective Incentives in School

Incentives	Median ranks	
	Boys	Girls
Favourable report for home	3	2
Success in a test	4	4
Score success for team or house in sports	4	5
Given marks for team or house in class work	6	6
Given a prize	6	7
Good marks for written work	6	6
Quiet appreciation from teacher	7	6
Going with form on some outing	7	7
Election to position of leadership by fellow-pupils	7	7
Election to position of authority by teacher	8	7
Temporary leadership in games	9	9
Public praise	11	11

I am not at all surprised at 'public praise' coming bottom for both boys and girls. It would be a sure way of incurring unpopularity. The same list of incentives was also given to the staffs to number in order of effectiveness. If we take the estimates of the pupils as reliable then the staffs greatly underestimated the effectiveness of (1) mere success in a test, (2) a good report to home; and they greatly over-estimated the value of (1) being selected to a position of authority by staff, and especially of (2) public praise.

¹ I do not discuss here the general problem of punishment, as I have devoted to it a part of my book, *Parents and Children* (McMillan, 1941). Various sections of earlier chapters in the present book are relevant to questions of discipline, notably those on repression and sublimation and on the initiation of impulses and on suggestion. Further references will be made to discipline in the later chapter dealing with 'problem' children and young delinquents.

CHAPTER XXXIII

ADOLESCENCE: PART I. GENERAL, SOCIAL, AND EMOTIONAL

The change at adolescence. The poet Keats once wrote, 'The imagination of a young boy is healthy, and the mature imagination of a man is healthy; but there is a space of life in between in which the soul is in a ferment, the character undecided, the way of life uncertain.' We may agree at once that this is an illuminating comment upon the peculiar characteristics of adolescence in a large number of cases. For many, this is, at times, a period of storm and stress, and of instability, not only of imagination but also of emotions, impulses, and interests. The youth with little more experience than that of a child may have the physical maturity of an adult, and he hates to be treated as a child. The development of sex brings disturbing emotions and new problems of self-control. There is often increased independence, or even opposition, in the attitude towards parents and others in authority; indeed, there should be now some weaning from too great a dependence on parents. At the same period for most youths there is the grave problem of the choice of a job, and for many the first experience of romantic love. It is a period of difficult adjustment within the self and in relation to others.

Keats shows, however, the over-emphasis and lack of qualifications that one may permit in the poet, but which must not be allowed in the psychologist. We must therefore repeat what was pointed out in Chapter XXXI, that the various stages of child development are not clearly marked off from one another; nor are there often any very sudden changes. The transition from one stage to the next is usually almost imperceptible to outside observers, and not fully realized at once by the child himself.

Adolescence means 'growing up'; and the period is usually

regarded as covering roughly the teens; but it is earlier by a year or two for girls than for boys.

The only instinctive impulse which may be regarded as substantially new is the physical element of sex; and, as we saw, some psychologists maintain that there are the embryonic beginnings of certain aspects of this before adolescence. But in the adolescent, whether it be chiefly the effect of this maturing sex instinct or not, some other impulses and emotions seem to be intensified, and especially there is a changeableness, an instability in emotions, impulses, attitudes, and interests greater than that of the relatively stable period of middle childhood, or of the more unified, controlled systems of later life.

The instability in adolescents is sometimes so great as to suggest a temporary neuroticism. Thus Dr W. D. Wall says that one-quarter of one club group he observed showed behaviour which would at any other period be regarded as neurotic, e.g., useless violence with furniture, obstinate silence, the bitter weeping of a girl and locking herself in a room because a friend had temporarily deserted her for another.¹

After long preaching on the part of psychologists the great importance of the period from an educational and social point of view is at last being widely recognized. Its importance from the religious point of view has long been recognized. The period is also a critical one for the development of criminality. A large proportion of confirmed criminals seriously begin their professional careers during adolescence, and the peak age for juvenile delinquency in this country among boys was 13 ; 0 in 1937;² in 1949, after the school-leaving age had been raised to 15 ; 0 the peak age also rose by a year, to 14 ; 0. These figures show that the misdemeanours were not due to the fact that boys had been thrown out into the rough and tumble of industrial life at the age of fourteen, though that is probably an important factor in those youths who begin their delinquency only after leaving school, as we shall see later in Chapter XXXIV. The figures

¹ W. D. WALL, *The Adolescent Child*, p. 77.

² See *Young Offenders*, by CARR-SAWYER, MASSERMAN and RUGGLES (1942), p. 52.

do, however, fit in with the supposition that the youths are impatient about getting into jobs with more freedom, and harassed by the problems before them.

Sex maturation at adolescence. The age for this maturing varies greatly. For example, about one-quarter of the girls in the United States begin menstruation before twelve and a half and one-quarter not until after fourteen and a half. The extreme range is very great; even among healthy girls it varies from about 9 ; 0 to about 20 ; 0.¹

As to boys, the onset of puberty is harder to determine with precision, but recognized signs are the appearance of pubic hair, the breaking of the voice, and the beginnings of nocturnal emissions. For the very beginnings of puberty one investigator found among 4,800 boys in New York City an age range from twelve to seventeen and a half.²

Clearly we cannot assume that, in any class of fifty girls aged about thirteen (or of boys about fourteen), all are now adolescent in a physiological sense. Still less in a mixed class or club of those ages can we assume uniformity.

While all admit that environmental changes play an important part in the mental experiences of adolescence, there is general agreement that the maturing of sex is one major cause. Thus the Spens Report (in Chapter III, Part 2 – based on a memorandum by Professor Burt) states that the 'modifications of character' are 'mainly due, directly or indirectly . . . at any rate so far as they are produced from within, to the maturing of the sexual glands and organs'.³ Injections of testosterone in

¹ An inquiry among 3,500 Finnish women showed that nearly 10 per cent. did not menstruate until the age of eighteen or over, while over 6 per cent. began at only twelve or younger. (See L. HOLLINGWORTH, *The Psychology of the Adolescent*, p. 21.)

Summaries of recent researches as to the onset of puberty and references will be found in the section on 'The Adolescent' by WAYNE DENNIS in the *Mental of Child Psychology*, edited by L. CARMICHAEL, 1946.

² C. W. CRAMPTON, 'Anatomical or Physiological versus Chronological Age', *Pedagogical Seminary*, 1930, cited by W. DENNIS, *op. cit.*, p. 644. We cannot, of course, take the appearance of pubic hair in boys as the sign of maturity equivalent to menstruation in girls.

³ See *Final Report*, Board of Education, Report of the Consultative Committee, 1932, p. 122. A section on the sex glands will be found in our Chapter XXXVI, p. 617.

young boys have been reported to be followed by 'a definite increase in aggressiveness in all social relations'.¹

Not only the sex glands, however, are concerned. The Spens Report, in another section on physical development, states: 'Some of the behaviour difficulties which occur in children during the states of puberty and adolescence are undoubtedly due to lack of balance in the secretions of the ductless glands.'²

Sex development may easily force itself upon the attention of the youth. Some girls become very self-conscious about the development of the breasts; the beginning of menstruation may be a disturbing experience, and even terrifying if the girl has not been warned beforehand. The more localized sensations of the boy in the genital organs, and the experience of erections, may be equally disturbing to boys, and nocturnal emissions alarming if the boys have not been informed beforehand. As we have already mentioned in Chapter IX on 'Sex and Sex Education', masturbation is extremely common and often gives rise to serious mental conflict.

The specific influence of sex maturation. In view of the great individual differences in the ages of sex maturing, it is very difficult to trace the precise influence of this on adolescent behaviour, as contrasted with the influence of environment. For such great changes as transference to the Secondary School, and leaving school and becoming a wage-earner, take place at about the same age for all, except for that minority who continue at school till sixteen or later, and the still smaller minority who go to a University or have some other type of college training. Most of the studies of adolescence relate simply to the age groups usually regarded as adolescent (say all the boys of thirteen or fourteen to about nineteen, or girls of about twelve to eighteen), without any inquiry as to when precisely the indivi-

¹ BIZE and MORICARD, *Bull. Soc. Pédiat. Paris*, 1937, **35**, quoted by VERNON JONES in his article on 'Character Development' in the *Manual of Child Psychology*, editor L. CARMICHAEL, 1937, p. 726. In the same *Manual* the chapter on 'The Adolescent' by W. DENNIS summarizes much recent work on the influence of sex maturation.

² See p. 114 in the section based on memorandum submitted by Professor A. HARRIS and WINIFRED CLEAVER. We also discuss the ductless Endocrine glands in Chapter XXXVI.

duals entered on puberty. Such inquiries are of great value, but they do not enable us to distinguish clearly between the effects of physical maturation and of the other great personal problems appearing at this time.

There are, however, some few lines of evidence on the specific effects of sexual maturation. Clearest of all are the many reports of mental conflict just referred to, about the impulse to masturbate and worry about its consequences. The studies of cases of abnormally early or later puberty indicate that there is no close relationship between the growth of intelligence and the onset of puberty,¹ a fact already surmised from the absence of sudden increases in rates of growth of intelligence found in the study of age groups at twelve, thirteen, fourteen, and fifteen.²

A few inquiries also have been made among boys (or girls) of the same age and similar social and economic environments, some of whom were known to have entered on puberty and the others not. One of these may be summarized briefly.³ It relates to 402 girls in two schools in the United States half of whom had begun to menstruate. We will refer to these as the 'mature' and to the others as 'immature'. These girls were carefully selected from larger numbers so that each girl in the 'mature' group should be paired with one in the 'immature' group of the same chronological age and with a similar social and economic home status. Nearly all the girls were between twelve and fourteen and a half years of age. The girls were given detailed questionnaires chiefly as to social attitudes, family adjustments, play activities, and so on. The main findings were as follow:

The mature girls showed more frequently: (a) heterosexual interests; (b, interest in self-adornment and self-display; (c, day-dreaming and 'imaginative' activities. As we might

¹ Several examples of this are given by W. DENNIS in his article on 'The Adolescent' in the *Manual of Child Psychol.* p.

² See C. BURT, 'The Education of the Adolescent', *B.J.E.P.*, 13, p. 127, and *The Bright Child* 1937, p. 650, where graphs of mental development are given for bright, average, and dull children.

³ See article by C. P. STONE and R. G. BARKER in the *J. of Genetic Psych.*, 1939, 54.

expect, they showed less interest in games and activities of a vigorous type. The evidence was against the view that puberty increased family friction or the revolt against family discipline. It should be added that these girls were nearly all above average intelligence.

The number of studies as to mental changes in boys correlated with sex maturing is small, but so far as they go they tend in the same direction; among boys of a given age, those who have entered on puberty are more 'mature' mentally than those who have not.¹ Also in an inquiry with the Masculinity-Femininity test (as to attitudes and interests) it was found that among boys and girls tested at the average age of 16·5, boys who matured early showed more traits regarded as especially masculine than did the boys maturing later; and the early maturing girls were more essentially 'feminine' than the late maturing girls.²

Physical development at adolescence. It is clearly established that a marked increase in the rate of bodily growth appears at the time of puberty, beginning just before puberty, and following a period of relative stability in physical growth. This marked increase shows itself in height and still more in weight. The period demands a liberal diet, the avoidance of severe physical strains and of prolonged undesirable postures.³

There is general agreement that, as we have seen, girls mature sexually earlier than do boys. A number of estimates point to their being about one or two years ahead in the physical development spurt. Thus, in one investigation on over 216,000 children it was found that on the average the boys surpassed girls in weight up to the age of eleven and a half, but then the girls moved ahead and at thirteen and a half girls were $7\frac{1}{2}$ lb. heavier than boys. Then the boys began to gain, and by fifteen and a half were again slightly heavier than the

¹ For summary of inquiries, see W. DENNIS, *op. cit.*, pp. 649-51.

² See L. M. TERMAN and C. COX MILLS, *Sex and Personality* (1936), p. 87.

³ For details as to physical developments in adolescence, see The Board of Education Report, *Secondary Education 1938*, Chapter III, Part I, or the Board's Report on *Differentiation of the Curriculum for Boys and Girls in Secondary Schools*, 1923, Chapter III, Part I A, and Appendix 5, by DR J. G. ADAMI.

girls.¹ Similarly, boys were at all ages taller than girls, except from eleven and a half to fourteen and a half, when the girls surpassed them. Various other investigations have shown the general tendency for the period of most rapid growth (since babyhood), to begin in girls about two years earlier than it does in boys.² As there is also evidence that the more rapid increase in physical growth tends to appear just before puberty, this affords us further evidence that puberty in girls appears on the average about two years earlier than it does in boys.

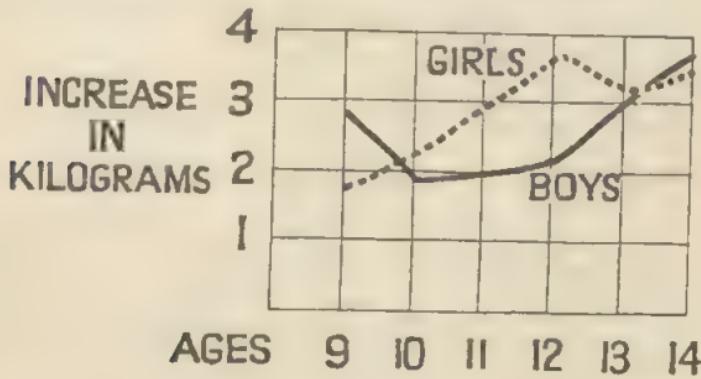


FIGURE 8
AVERAGE INCREASE IN WEIGHT IN BOYS AND GIRLS:
AGES 9 TO 14

The striking nature of the physical changes is brought home if one plots a graph for these years. For example, in the graph above, note the marked rise in the boy's line at thirteen, after the relatively stable period of ten, eleven, and twelve; and the rise in the girl's line, two years earlier, at eleven and twelve years.

With the marked physical development of adolescence there often appears an increased interest in the development of the body, boys taking more readily to physical exercises, girls to exercises for health and beauty. There is now indeed a great

¹ See memorandum by DR J. G. ADAM, in the Board of Education Report just referred to.

² See, for example, the table given by C. BURT in *The Backward Child*, p. 635. The graph is based on this table of Burt's.

opportunity for enlisting this newly developed pride in physique as an aid to physical education. I may quote here a report made by one of my former men students on this topic.

"The consciousness of rapid physical growth and increased muscular power was a basis of a certain pride of the body. I was soon devotedly following the cult of muscle. For a time this was an obsession, and all my efforts were directed to the increase of the size of my muscles and the capacity of my chest. Celebrated wrestlers with their huge muscular development became my heroes: especially Hackensmidt, the Russian, and Madradi, "The Terrible Turk". The former won, and so became my physical hero. I used to dote on his photographs with a kind of passionate enthusiasm.'

In an inquiry among 220 University graduates I found that an increase in interest during adolescence in group games was reported by 73 per cent. of the men and 70 per cent. of the women. (See Table XI, p. 545.) Similar percentages for boys of fourteen to seventeen and 56 per cent. for girls, were found by Dr W. D. Wall among nearly 200 young workers as to increased interests in sports, physical training, swimming, etc.¹

As regards physical activities in general, it is the larger freer movements that attract growing adolescents. Indeed, there is evidence that in some cases at least the steadiness of the hand and the control of finer movements may decline slightly for a short period near the beginning of adolescence.² Hence we must be prepared to find some adolescents marking time, or even deteriorating for a time, in work requiring fine hand and eye co-ordination, as in drawing, writing, or needlework.

With physical growth and the maturing of the sex instinct goes an increase of interest in *personal appearance*. The girl pays even more attention to her appearance and clothes, and the boy begins to brilliantine his hair and even to wash his neck more regularly. In his inquiry among young adolescent workers (most of them between fourteen and sixteen), Dr W. D.

¹ See his book, *The Adolescent Child* (Methuen, 1948), p. 102. This is a most useful general survey of the psychology of adolescence.

² See article by W. J. SPARROW, *B.J.P.*, 1936, 26.

Wall found that 86 per cent. of the girls and 66 per cent. of the boys confessed to an increased interest in personal appearance since the age of thirteen.¹

General emotional changes during adolescence. We have no evidence that adolescence is on the whole an unhappy period for the majority of young people; on the contrary, such reports as we have suggest the opposite.² Nevertheless, there is general agreement that *instability* is a common mark of the adolescent, instability of emotions and of interests. There tend to be spurts of activity rather than prolonged steady effort. Moods often vary between elation and dejection. Dreams of future greatness may be followed by thoughts of running away from home, or even of suicide. There is usually greater self-consciousness, sometimes accentuated by the clumsiness that attends rapid physical growth, or by the marked accentuation of growth of certain parts, e.g., the nose, the hands, or the breasts, or by the breaking of the voice. Such stresses and strains may be largely due to changes in the environment, when the youth goes out to earn his living, or wishes to be thought a grown-up, and revolts against the former home-discipline, but there is general agreement that the maturing of the sex impulses and interests is a fundamental cause.

To illustrate these various changes and experiences in adolescence I will first give some account of an inquiry I made among 220 University graduate students, ages about twenty-one or twenty-two. With these, at least, the strain of earning a living had not yet begun, and the environment of the same school would continue in nearly all cases up to the age of seventeen or eighteen. We must bear in mind that these persons are a selected type, well above the average intelligence, and on the whole from homes above the average social-economic level, though most of these students had obtained their Grammar and University education only through scholarships or grants. There seems, however, no reason why young people from

¹ *Op. cit.*, p. 102. Results of inquiries in the United States as to likes and dislikes among adolescents of items in their physical appearance will be found in A. T. JERSILD'S *The Psychology of Adolescence* (1957), p. 31.

² See W. D. WALL, *The Adolescent Child*, p. 15, and B.J.P., 1948, 38.

poorer homes who at fourteen or fifteen have become wage-earners should experience *fewer* emotional stresses or changes than these students. Indeed, one might expect the opposite, and we shall cite some evidence to support this. On the other hand, we should not expect the same development in intellectual or aesthetic interests among young wage-earners.

The questionnaires filled in by my students were anonymous. In addition, I had over 200 confidential essays from the students based on their own adolescent experiences. I had guaranteed that no one should read these essays except myself, and many of them were astonishingly frank.¹

The frequency of emotional moods and attitudes in adolescence. Table XI gives a summary of the results of my questionnaires, given to graduate students in the years 1926, 1927, and 1930. The items are suitably grouped in the table, but in the questionnaires they were more haphazard to encourage independent reports to each item.

Special attention may be drawn to the following: among *women* and *men* the great frequency of increased interests in religion and in group games; among *women* the great frequency of moods of intense dejection, and of a special interest in a member of the *same sex*; among *men* the frequency of interest in the opposite sex, and of moods of intense dejection and even thoughts of suicide, and yet also of expectation of future greatness.

When handing round the questionnaires further explanations of some of the terms in the list were given; thus 'interest in the opposite sex' was to imply a feeling of real attraction, something regarded as 'love'; the 'contemplation of suicide'

¹ Here a word may be said on the use of the questionnaire. In using questionnaires, one must be aware of the danger of distributing them widely and then only dealing with the selected records from those who have taken the trouble to reply. These are apt to come from those who have very strong views on the topic concerned, or something particularly interesting to report in this case of adolescence, or those whose are the experts at writing about themselves. This danger is avoided by confining the questionnaire to a given class of students and entitling it to cover only that class, though, of course, we have to bear in mind the selected nature of the class itself.

An account of my own inquiry was first published in *B.J.P.*, 1931, 13.

was not merely thinking of it, but a felt impulse towards it. But it is not suggested that such experiences were as serious as the adolescent felt them to be at the time. For example, one youth who actually ran away from home early one morning did not go far, but returned in time for breakfast! Two actual attempts at suicide were reported in the essays; in one case great distress was reported when failure of the attempt was realized.

TABLE XI

*Percentage of University Students Reporting a Marked Intensification
of the Following During Adolescence*

100 Men; 120 Women

	Men	Women
Gregarious impulse	61	64
Interest in group games	73	70
Interest in opposite sex	84	61
Aversion from opposite sex	43	45
Interest in member of same sex	50	72
Religious interest or experience	78	74
Decline of father's influence	54	39
Increase of father's influence	45	27
Decline of mother's influence	44	35
Increase of mother's influence	40	42
Hero-worship of teacher	37	57
Expectation of future greatness	66	57
Moods of intense dejection	61	76
Contemplation of suicide	38	29
Contemplation of running away from home	40	33

Some confidential reports. The confidential essays I received afford a wealth of illustrations of these various moods, experiences, and attitudes characteristic of adolescence. Students repeatedly assert that they thought their own most intense experiences to be peculiar and perhaps unique. They carefully kept secret their intense dejection and thoughts of suicide or their worship of a senior girl. One girl who described a period about sixteen years of age as one of 'absolutely unrelieved gloom' with a 'desperate angry bewilderment' - discovered eventually another girl who felt similarly and 'sympathy eased

the agony. I achieved a certain detachment from my own gloom in contemplating another's.' There is only one record of an intimate feeling being openly expressed, namely, when one girl described her loneliness in a poem for the school magazine, beginning, 'I am unwanted and hated' – which her parents read with astonishment. This girl writes, 'During adolescence my make-believe play changed from fairies to psycho-analysis. I played for hours, at first with a cousin, then later alone, the same type of story: it was always about a difficult child who really only needed love and understanding to become exemplary – and at last she found it.' This girl obtained first-class honours at the university and became a very effective teacher.

The main sources of mental trouble seemed to the youths to be sometimes intense self-consciousness (accentuated if there was excessive size or extreme awkwardness), strong feelings of inferiority, sometimes unhappy relations with parents, sometimes struggles with doubt about religion, sometimes disgust or fear at the first experience of sex emotions, or, as in the case of girls, of premature advances by boys or men, or 'crushes' on mistresses, sometimes even distress at social evils which seemed insoluble unless the individual could have a free hand to deal with them.

The dreams of future greatness take very varied forms, from ambitions as 'social reformers' to a great desire to rival a world champion wrestler in physical strength, already quoted.

One thing is clearly demonstrated by some of the essays, namely, that some of the intense *feelings of inferiority* during adolescence were without reasonable grounds and were consistent with remarkable strength of character or ability, which was clearly demonstrated a few years later, even in those very things in which weakness had been felt. Thus one woman student wrote: 'The feeling I most connect with the period of adolescence (which in my own case did not end, I think, till about twenty) is complete lack of confidence. A remark about my lack of confidence was put on my report by one of the staff.' Yet this girl became head girl of an important school, gained first-class honours at the university, and at twenty-three in her diploma year was carrying out the duties of Lady Mayoress of a Midland borough with dignity and apparently calm con-

fidence. Another student writes of 'a heightened, perhaps exaggerated consciousness of stupidity and general inferiority', sometimes feeling 'an intolerable sense of failure'. Yet she, too, obtained first-class honours in the B.A. examination.

These feelings of inferiority and self-consciousness, common though they are, are not invariable. Another student writes that she had a 'self-assurance far beyond my years according to others. I had a habit of command which sat far more easily on my shoulders then than it does now.'

Reports by young wage-earners. A number of items, somewhat similar to one or other of those in Table XI, were included in a questionnaire given by Professor Olive Wheeler to 100 young wage-earners about their adolescent experience.¹ (There were fifty men and fifty women.) The percentage who reported such experiences were as follow: religious experiences, 50 per cent.; interest in the opposite sex, 91 per cent.; important friendship, 90 per cent.; hero-worship, 80 per cent. So far as these figures are comparable to mine, they suggest that marked emotional experiences are not less frequent among adolescents who are already wage-earners. Fuller evidence of this, however, is supplied by more recent inquiries by Dr W. D. Wall. He submitted a questionnaire to 110 girls and 86 boys. Over three-quarters of these were between fourteen and sixteen years of age; forty-one were between sixteen and eighteen. This inquiry usefully supplements my inquiry on students in that about half Wall's young people were already working in offices or factories. (The others were attending full-time technical and commercial courses.) On the other hand, these youths of only fourteen or fifteen might not by then have had their most moving experiences, and were perhaps hardly mature enough to take so detached a view of their own adolescent experiences as were the older university students. I select (for Table XII) reports on points which are most comparable with those in my own inquiry, taking them in the order as they appear in my own Table XI.²

¹ See her book, *The Adventure of Youth* (1914), p. 56.

² Further details will be found on pp. 70, 71, and 102 of DR WALL'S book *The Adolescent Child*.

The number of these youths reporting an increased interest in religion was decidedly less than I found among the University Graduates. Apart from that, Dr Wall's results, like those of Professor Olive Wheeler, suggest that the University students are not peculiar in the frequency of marked emotional experiences and interests during adolescence. This is more decidedly brought out by Dr Wall's discussion of his results, with examples, and by the reports of many individuals given by Margaret Phillips in her most readable little book, *The Young Industrial Worker*.

TABLE XII

*Percentage of Young Workers and Technical Students (aged 14 to 18)
Reporting Intensification of Interests Since 13; 0*

	Boys (85)	Girls (110)
Gregariousness (interest in 'social activities')	59	79
Interest in opposite sex	70	73
Religion	34	38
Mood changes - from 'good spirits' to being 'downcast' or 'fed up'	56	70

The adolescent and religion. In Table XI it was shown that among the university students an intensification of religious interests or experience was reported by 78 per cent. of the men and 74 per cent. of the women. Professor Wheeler's figures for 200 students were - men 62 per cent., women 61 per cent.; for workers - of 50 men 18 per cent., of 50 women 82 per cent.¹ Dr Wall's figures were - boys 34 per cent., girls 38 per cent. The higher percentages for students were perhaps partly due to selection: on the whole, we may expect those young people who elect to become teachers to be somewhat more serious minded than the average. Also three-quarters of Dr Wall's adolescents were under sixteen, with the possibility of more intense religious experiences to come.

¹ *Op. cit.*, p. 73. The difference between men and women emphasizes the danger of a special selective influence and of giving percentages on only 50. It is not clear how Professor Wheeler obtained her workers' reports.

The early work by Professor E. D. Starbuck on the age of definite *conversions* is worth recalling.¹ He submitted questionnaires to many hundreds of persons as to the precise age of either marked sudden changes, which could be labelled 'conversion', or more gradual deepening of religious experience. His results do not give an estimate of the proportion of persons

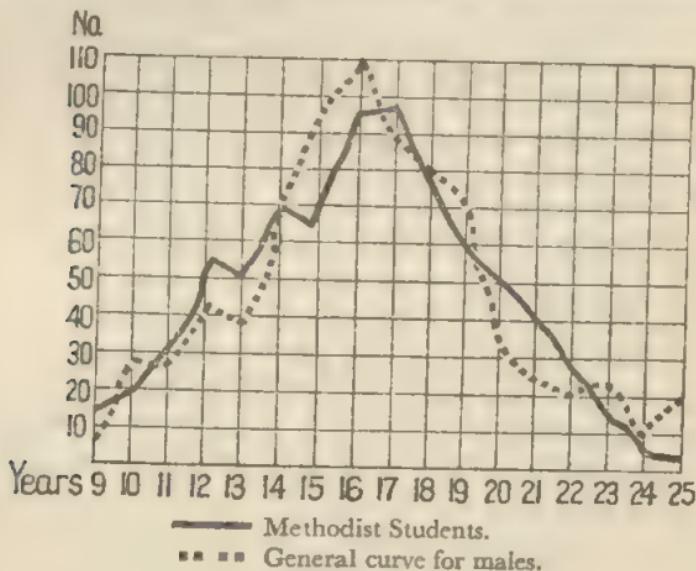


FIGURE 9

FREQUENCY OF CONVERSIONS OF DREW THEOLOGICAL STUDENTS, AND GENERAL CURVE FOR MALES

who undergo such changes, for they were gathered chiefly from members of various churches. But they do suggest the most critical ages for those who *do* have these experiences. For males a main source was two regiments of soldiers, and the general curve for males was remarkably similar to that for 776 Methodist Theological Students, as shown in the graph, Figure 9.

As regards females, Starbuck found that the marked rise in the number of conversions occurred about two years earlier than that for males, a sharp rise occurring as early as eleven,

¹ See his book, *The Psychology of Religion* (London, 1914).

with a peak at thirteen.¹ Though religious interests and even changes marked enough to be labelled conversions, may be stimulated earlier or later by environmental influences, it seems clear that adolescence is a time peculiarly sensitive to such influences and that the home or church influences may have relatively little effect in some cases until the susceptible age of adolescence, at least so far as deep emotional interest is concerned, and not mere external behaviour.

It should be borne in mind that the inquiries were made early in this century and in America. Probably marked and sudden conversions are considerably fewer in recent years. A more recent inquiry shows that adolescence is also the peak age for discontinuing church attendance, the reason most frequently given being 'loss of faith'.²

There is clear evidence that adolescents become more critical as they pass from eleven or twelve to sixteen or seventeen as to crude ideas about God and Hell, and yet that a majority retain a belief that religion forms a basis or at least a help for living a good moral life.³

Social relationships. In early adolescence individual friendships often involve a more intense emotional bond. The sight of two adolescent girls constantly going about together arm in arm, and insisting on sitting next to one another whenever possible, is a familiar one. Intimate and individual friendship, as contrasted with mere play acquaintances, is a characteristic of later adolescence.³ Entries about their friends in diaries kept by boys of fourteen to fifteen refer chiefly to 'doings'; from sixteen to eighteen they refer more to emotional moments.⁴ Of Professor Wheeler's young wage-earners 90 per cent. report some 'important friendship'. Qualities found most attractive by American adolescents in their friends are cheerfulness, liveli-

¹ See F. E. MORETON, *B.J.E.P.*, 1944, 14, p. 73.

² See F. H. HILLIARD, *B.J.E.P.*, 1959, 29, p. 50. A wide inquiry in the United States among High School youths also indicated that the average teen-ager had a favourable attitude to religion and the church. H. H. RUMMERS, M. S. MYERS, and E. M. BENNETT, *Purdue Opinion Panel*, 1951, 10.

³ See article by CHARLOTTE BUHLER on 'The Social Behaviour of Children', in *Handbook of Child Psychology*, edited by CARL MURCHISON (2nd edit., 1933), p. 389.

⁴ CHARLOTTE BUHLER, *From Birth to Maturity* (1935), p. 194.

ness, initiative in activities, freedom from pretence, and ability to enjoy a joke against oneself.¹

Table XI on p. 545 showed that over 60 per cent. of the men and women experienced an increase in the *gregarious* impulse during adolescence. (Wall's figures were 59 per cent. for boys and 79 per cent. for girls.) Of course, this impulse appears before adolescence; as we have seen in the last chapter, boys and girls frequently form gangs or societies as early as eight or nine years of age. But in adolescence such societies take on a more adult form: and co-operation becomes more serious and permanent.

One investigation on 1,400 girls from eleven to seventeen years of age showed that thirteen was the peak age for joining some 'society', with a distinct drop at fifteen. Another investigator of the political interests of adolescents in Vienna found that up to sixteen years the wish to join *some* association was 'much more decisive for participation in a political group than the political interest itself'.²

The tendency to hero-worship and the craving for a 'leader' will emphasize the attachment to a group or club when it includes an individual felt to be worthy of devotion.

Though group games are played by younger children, it is only at adolescence that one finds the genuine *team spirit*. I have often watched cricket games being played by groups of boys of different ages on the same recreation ground. Boys of nine or ten may make up 'sides' and compete, but one is apt to find two fielders having a private game of catches when they ought to be attending to the match; and boys of that age seem more concerned that they should bat or bowl next rather than that the best thing should be done for the side.

As to choice of leaders, a careful study of groups in co-educational Grammar and residential Private schools was made in reference to: (a) the task of conducting their own English lesson, and (b) the organization of a party for other forms in the school. It was found that in the senior groups (average age 15; 11) different pupils were chosen as leaders for

¹ See A. T. JERSILD, *The Psychology of Adolescence* (1957), p. 212.

² CHARLOTTE BUHLER, *Handbook of Child Psychology*, p. 393.

the two tasks, because of their special qualifications for the job; whereas in the junior group (average age 13; 10) the same leaders emerged for the two tasks, the juniors being dominated by personal prestige.¹

Love and sex attraction. We have already dealt with this in Chapter IX (Sex and Sex Education), but we may briefly recapitulate and add some new points. In middle childhood, so far as boys and girls tend to separate into groups it is largely because of separate interests, or the greater physical aggressiveness of boys. In early adolescence there often appears further signs of some aloofness or even antagonism; the boys regarding the girls as 'soft', the girls thinking the boys 'rough'.

Later there appears some rivalry, especially in co-educational schools; the girls may be ambitious to equal the boys in mathematics; the boys may be annoyed if beaten by the girls in French, as they often are.² Later still, at ages which vary greatly for different individuals, the opposite sex is found attractive, and shyness may be felt or flirtations begun. At this stage also a girl may fall in love with a master, or (less frequently) a boy feel attracted by a mature woman.

All these must be regarded as stages in a natural development. But where there are not due opportunities of mixing with the opposite sex, then natural attractions may be replaced, more particularly in girls, by a passionate attachment to a member of the same sex. This phenomenon is very familiar in girls' schools, where it has been labelled a 'Crush' or 'Pash', or 'G.P.' (Grande Passion). Table XI on p. 545 shows that 72 per cent. of the women reported a marked increase in interest in a member of the same sex.

From the reports of my women students it was clear that some of these experiences caused great unrest. The girls would act like fond, doting lovers, kissing the book lent to them by a beloved mistress, walking up and down the road past the house when the loved one lived, and feeling profound misery when

¹ See L. W. SHEARS, *B.J.P.*, 1953, 44, p. 240.

² In Mr Pritchard's inquiry described in Chapter XVI, he found that French was less popular among boys in mixed schools than it was in boys' schools.

the mistress was away from school. I have been impressed, in reading many essays describing such experiences of the writers during adolescence, by the fact that some homosexual attractions are by no means confined to girls of inferior character or intelligence. Some of my ablest women students reported such experiences, which had been so intense as to cause great mental distress. When mistresses realize the existence of such excessive adoration by one of their pupils there is an obvious danger of its being enjoyed and encouraged.¹ If, however, it is wisely handled it can be used as a means of good influence. The attitude of some teachers, who regard it as wicked and disgusting, reveals a lack of knowledge of, or of sympathy with, the typical adolescent girl.

In view of recollections of my own school days I was surprised to find the frequency with which somewhat similar feelings to the girls' 'crushes' (though usually less intense) are experienced by boys. It seems to be commoner in boarding schools, and yet it is clear from reports I have received that among day schools the phenomenon is not unknown. I have talked intimately with some who have passed through these experiences, and I believe that there are more boys, than usually supposed, who pass through some homosexual stage, of a perfectly innocent type, and yet disturbing of peace of mind.

There is evidence that hearing about homosexual attractions can lead to such feelings in the hearer (I have known of one such case myself), and it seems possible that if the idea once gets going in a school, suggestion may work speedily.

We may recall the evidence given in Chapter IX (p. 115), that these homosexual attractions were far less common in co-educational schools.

Of the students who had been at co-educational schools I found an overwhelming majority (sixty-five out of seventy-two) in favour of co-education. In particular, they thought that in later years it made easier friendly and natural relations with students of the opposite sex at the University or elsewhere.²

¹ CLEMENCE DANE has portrayed this in her book, *The Monstrous Regiment of Women*.

² Of course, this question of the relations between the sexes does not settle the problem of co-education. Difficulties of organization and of the staff have to be taken into account.

Students laughed at the idea that flirtations were prevented by segregating boys and girls in separate schools. They said that in some cases much more time was wasted through a boy going a mile or so off his way home to meet a girl coming from another school.

In another inquiry by one of my former research students, among 340 persons who had been at co-educational schools and 250 from single-sex schools, 72 per cent. of the former said that co-education had helped their relations with members of the opposite sex, while only 5 per cent. said it had hindered. Flirting in term time was recalled by 56 per cent. of the 'co-eds', but also by 52 per cent. of the others.¹

Apart from the question of the frequency of flirtations, it is quite possible that affectionate friendships between young people of opposite sexes are of some value as preliminary experiments for the final choice of a suitable mate for life. On the whole, it does at least seem that when pupils are segregated in single-sex schools there is an additional reason for affording opportunities for the sexes to meet in mixed clubs.

Cultural environment and innate development. We have just seen how the development of sex relations can be affected by the immediate social environment; and this may be a good place to interpolate a brief note on the general relation between the maturation of innate impulses and the particular cultural environment. Field anthropologists have shown how greatly behaviour varies in different societies. As we saw in Chapter V, their evidence is not inconsistent with the existence of powerful instinctive urges in all branches of the human family. Undoubtedly, however, the experiences of adolescents will vary greatly according to the different cultures in which they are reared. In some primitive tribes youths have great freedom; pre-marital sexual relations are allowed; they may have no special duties, and so on. In other tribes sex activities are frowned on; the adolescent is bound in by many taboos; or he

¹ See F. E. MORETON, 'Attitudes of Teachers and Scholars towards Co-Education', *B.J.E.P.*, 1916, 16. The article reports opinions on many other important aspects of co-education. On the whole, teachers did not find that co-education made discipline harder.

may have to work hard for his elders.¹ Clearly these varying conditions will have a marked effect on the particular problems the adolescents have to face. In some primitive communities it is claimed that adolescence does not *seem* to be a period of storm and stress. Yet we must repeat the warning given in Chapter V against assuming that the external observer (especially a foreigner) knows all that is going on in the youth's mind, below the surface. We have seen above that very often our own young people are experiencing troubles and yearnings of which their parents, and even their most intimate friends, are quite unaware. Furthermore, we are, after all, concerned with the problems of adolescence in our own present civilized culture, unless and until our general codes and customs are changed; and here our youths have to face the big problems of sex, probably more widespread than is usually recognized even if, for this country, we halve the numbers estimated in the Kinsey *Report* for intercourse among young people in the United States, especially in the lower socio-economic levels.

For nearly all adolescents there is now the problem of the choice of occupation, and sometimes the struggle for independence of parental domination. Sometimes there is a fight with religious doubts, and an effort to formulate some philosophy of life, or some ideals of character which are not too remote from any generally accepted views of the community they live in.

Ideals, ambitions, and day-dreams. Closely associated with some of the changes we have been considering earlier is the arousal of some ideal of conduct or service, or some dominant ambition. We frequently came upon these in our Birmingham inquiry about the choice of occupations. For example, one boy who wished to be an officer in the British Army in India wrote:

‘The reason I have made this choice is because I feel a sort of call which calls me among men and I would like to lead a man’s life. When I read the life of Robert Clive I had a strong desire to follow his footsteps, although I know I am

¹ Different types of adolescent training are described by MARGARET MEAD in her books, *Growing up in New Guinea* and *Coming of Age in Samoa*.

not half as good a man as he was. I should like to be all my life, among men who are willing to undergo hardship and perhaps death for the sake of their country.'

The great services to the country done by inventors, engineers, and doctors appeal to others. One boy hoped to keep his parents in comfort in old age; another to make enough money in business to support various institutions. The ambitious type is exemplified by another who wished to be an engineer. 'I want to do something big, something that will both astonish and influence the public. This I will do if possible.'

Among the girls there were those who were longing to help others or relieve suffering; for example, the girl whose guardian wanted her to teach but who herself wished to be a nurse, in order to attend to the 'physical trouble of children, because no one can learn properly if their body is in any pain'. Another girl wrote:

'Most of my leisure time was spent in thinking of my ideals and what I was really working for. Why go to school at all? At last the necessity of education dawned upon my horizon. From this time forth I decided that in no way could I serve my country and fellow men in any better way than by spreading education. . . . My school friends laughed at me, but they did not influence me in the slightest . . . the aims are good and there is the satisfaction that you have achieved something.'¹

Other girls wanted to repay their mothers and give them comforts in advanced years. Sometimes the altruistic urge takes the form of devotion to an admired leader; sometimes it finds an outlet in work for a great society such as the Red Cross or for a political party which seems to the youth to hold the secret for the welfare of the country. At this stage we come to the development of an ideal for the self and of a moral sentiment which we discussed fully in Chapter XIII (p. 163).

No doubt the altruistic impulse is closely linked with ambition and self assertion, as we saw in Chapter XIII. 'Expectations of future greatness' were reported by 16 per cent. of my

¹ Article by F. M. RICHIE, *Education*, May, 1925, vol. 8, p. 67.

men students and 57 per cent. of the women; and the confidential essays showed that these sometimes took the form of being a leader in social reform, etc. The blend of personal interest and altruism is well shown in the decision of one student with a keen interest in foreign languages and in travel; she decided to become an interpreter, and wrote in her diary: 'That's what the world needs more of - that we should be able to understand each other in speech and thought.'

Often, unfortunately, both altruistic ideas and personal ambitions largely remain as *day-dreams*, in which the youth finds some satisfaction in imagining instead of actually pursuing the ends. A certain amount of such day-dreaming may be regarded as natural and healthy in the adolescent. Of Wall's young workers, only about 4 per cent. said they never indulged in day-dreams; and an increase in day-dreaming since the age of thirteen was reported by 55 per cent. of the girls and 27 per cent. of the boys, though about a quarter of that number said it had decreased. Sometimes day-dreams pass imperceptibly into definite aims. Sometimes they may be expressed in the form of stories and verses, and even become the source of genuine creative work. Sometimes they are a means of partial satisfaction of natural activities for which the particular individual is usually unsuited - the weak boy dreams of prowess on the playing field, the plain girl dreams of conquests in the ballroom. Sometimes they may be an unhealthy stimulant to sex desires. Sometimes day-dreams are fantasies of misdemeanours which one day may be suddenly put into effect. Nearly all adolescent delinquents, says Burt, are 'habitual day-dreamers'.¹

When day-dreams become a substitute for action and for adjustment to reality they suggest either constitutional mental weakness or the giving up of the struggle for satisfaction and mental peace by adaptation to (or of) the environment.²

Ideas as to conduct and morals. Our discussion of these during middle childhood (p. 527) led us into the adolescent period.

¹ *The Young Delinquent* 1925), p. 371.

² An excellent brief chapter on day-dreaming will be found in W. McDougall's *Outline of Abnormal Psychology*.

Then the development of the ability to form general abstract ideas, e.g., 'honesty, kindness', leads to the tendency for such to appear, instead of the concrete individual examples given by younger children. On the other hand, there appears also the allowance of exceptions to a general rule according to circumstances, e.g., a doctor telling lies to a nervous patient about his health. The growth of a sense of responsibility to others (including parents) also comes into view.

In a recent investigation in Secondary Modern and Grammar Schools, when three problems of conduct were posed about a supposed boy J, pupils were asked: (a) what J *ought* to have done, and then later (b) what they thought J actually did. It was found that the moral standards rose steadily with age (except in one Secondary Modern School), whereas there was a much slower increase in the number of judgements that J *did the right thing*.¹

Attitudes to parents. No one, I think, except a few over-dominant or doting parents, would deny that the great dependence of young children on their parents should decline as they grow to young manhood and womanhood; and psychologists agree that the absence of such 'weaning' from overdependence is a bad sign, as we have shown in the discussion on the 'mother complex' (Chapter XI).² We know in fact that generally parental dominance does decline — though not necessarily affection for the parent. In one inquiry in the United States nearly 2,000 children were asked what they would do in 'a specific case of conflict between teacher and parents'. It was found that, while, by young children parental authority was preferred, 'a marked decline began about eleven and was most rapid after fourteen in girls and fifteen in boys'.³ In our 'Inquiry as to reasons for the choice of occupations among secondary school pupils' we found that the percentage of boys who gave as one of their chief reasons the 'father's wish', or the fact

¹ See J. F. MORRIS, 'The development of adolescent value judgments', *B.J.E.P.*, 1938, 28.

² Yet in one inquiry among 1,000 students in the United States it was estimated that, even at College age, half the students had not yet attained emotional emancipation from their parents. See *Soc. Sci. Res.*, 1932, 36.

³ See STANLEY HALL, *The Psychology of Adolescence* (1916), Vol. 2, p. 376.

that it was 'father's occupation' declined suddenly after fifteen.¹ The figures in Table XI on p. 545 indicate that more of the men and the women students report a decrease in the influence of the father than those who report an increase during adolescence: and so with the mother's influence on the men; more women, however, report an increase of the mother's influence. The differences are not great; and it may well be that, in this selected group of students, most of whom probably owed their University education to some sacrifice on the part of parents, the influence of the parents continued or increased more than is usual.

We must make a distinction between *affection* for the parents and the dominance of their influence. A youth may increasingly use his own judgement in deciding what he will do, or what his views shall be on religion or politics, or whom he shall choose for his friends, etc.; yet it is quite possible that, at the same time, his affection for the parents may increase. Indeed, in some cases the increase of independence will in itself remove some causes of friction and so encourage greater affection. Also with growing maturity the youth who has had to be severely disciplined by a parent may come later to understand its value better, and so be reconciled with the parent himself.

It is notable that in Wall's inquiry 50 per cent. of the boys and 53 per cent. of the girls, thought their love for the father had increased since the age of thirteen; whereas those who thought it had decreased numbered only approximately 3 per cent. and 2 per cent. respectively. As regards the mother, 56 per cent. of the boys and 67 per cent. of the girls thought their love had increased, and only 5 per cent. of the boys and 4 per cent. of the girls thought it had decreased. Nevertheless, we find in conjunction with this that about two-thirds of the boys and three-quarters of the girls found that they were more inclined to answer back and do the opposite to what was told them by adults, and the impulse to run away from home was reported by 38 per cent. of the boys and 19 per cent. of the girls.

In some families violent antagonism is roused between a

¹ See article by C. W. VALENTINE and F. M. RITCHIE, *Forum of Education*, 1927, 5.

youth and a parent. This was exemplified in a number of my confidential essays. Several speak of the loss of parent's prestige in these adolescent years, of parents who thought only of the youth as a child, 'their child, with the stress on the possessive, never thinking of me as a separate entity with my own feelings and emotions'. In a few cases one of the parents was strongly opposed to a girl's continuing her education at the University instead of going out to earn at once. There were also comments which confirm the general view that the adolescent's wish to be independent of his parents' support and to feel himself a 'man' and enjoy greater freedom, is one important reason for wishing to become a wage-earner as soon as possible. This has a bearing on the raising of the school-leaving age to sixteen, as recommended in the Crowther Report (1959) as against the preference of some for County Colleges and part-time education for fifteen- to eighteen-year-olds.

As we shall see in a later chapter, unhappy relations between the parents themselves are well known to encourage problems of conduct in young children. They can, of course, cause much unhappiness to adolescents, who may side with one parent and so antagonize the other, or see some grounds for sympathizing with each to some extent and yet also criticize each to some extent. When the adolescent himself needs careful handling or even firm discipline at this time, conflict between the parents may be a serious source of trouble.¹

Even when the parents are in substantial agreement on questions of training, difficulties may occur when the young people discuss their affairs with friends. They may find other youths who are allowed far more pocket money, or can keep all their wages, or who can stay out much later. Girls whose dress is controlled by a strict mother find that others are allowed to 'doll up' as they like, and so on. In such cases those kept even in reasonable control naturally tend to think their parents unfair. It is, in fact, exceedingly difficult for parents who do not believe in complete freedom for the youth of sixteen or seven-

¹ I have discussed the importance of agreement between the parents on questions of discipline, and other problems of home and school discipline, in *Parents and Children* (Methuen, 1954).

teen (even if earning) to fight against customs which are usual in the circle of their boy's or girl's acquaintances. Difficulties are made greater by the individual differences between the children themselves. Some can safely be granted much more freedom than others.

In view of all these difficulties, which also affect the work of the school, there are good reasons for arranging talks to parents on the characteristic traits of adolescents, so that their varying moods will be better understood, and for a discussion of problems of freedom and control so that some general principles may be more widely accepted; yet we cannot expect anything like uniformity, and the varying degrees of affection between the child and parents in different homes would make such uniformity undesirable.

Should we discuss adolescence with adolescents? How far could we help the adolescent by letting him know that the frequent variations of mood, of extreme elation and dejection, or the contemplating of suicide, are often merely passing phases of the adolescent development? Such talks have indeed been suggested by some important bodies dealing with the training of young people. It would seem helpful to inform an adolescent that he is likely to be subject to extreme moods, and, in particular, that he is not alone in the unhappy inclinations to run away from home or even to commit suicide. My own reports show clearly that many adolescents felt a greater distress because they thought their own inner struggles were unique. On the other hand, to speak to adolescents of the common intensification of religious interest, or of high ideals, as passing characteristics of this adolescent phase, or of the expectation of accomplishing great things in life as a common illusion, would seem clearly undesirable.

One matter at least could be spoken about, namely, the plain facts of sex development. It is clear that, even in these days, young people are often allowed to experience the first signs of physical maturity without having been warned beforehand. In my own work of psychological analysis and treatment I have known several cases in which great early distress due to ignorance about sex development has caused neurotic condi-

tions lasting for a considerable time, indeed, until relief followed the discovery of their origin.

I find that some of my women students think that girls should also be told about homosexual tendencies. It may be useful for an adult friend or parent who has the confidence of the girl to inform her individually that passionate attachments towards some beloved mistress or older girl are usually temporary phases and that they need not be unduly upset about them, though many, no doubt, would refuse to believe such statements. On the other hand, any general discussion about homosexuality carries with it the danger due to suggestion which has been found to be effective in some people who previously have had no homosexual inclinations.

A few of my students thought that some adolescents would regard their emotional experiences – even the most unhappy ones – as so personal and intimate, that they would resent their being spoken about. At least, however, adolescents should be encouraged to initiate private talks with a teacher they trust.

Attitude to teachers. We have already mentioned that one inquiry in the United States showed that there was a great increase in the number of children at fourteen (girls) and fifteen (boys) who said they would side with the teacher rather than a parent in a case of conflict between the two. In our Birmingham inquiry of 1927 we did not find that teachers had nearly so great an influence in the choice of an occupation. At that time, however, the schools were not much concerned with vocational guidance, and in any case the type of work chosen is chiefly a family affair.

In my inquiry among University students 57 per cent. of the women and 37 per cent. of the men reported an attitude of increased *hero-worship* for some teacher during adolescence. Furthermore, the indirect influence of the teacher may be great, even where the pupil is not explicitly aware of it at the time. For example, the teacher would surely have some influence in determining the pupil's interest in his school subject; and in another inquiry I made among University graduates as to reasons why they chose to become teachers, 'Interest in favourite studies' proved the most influential motive for the

women and third in the list for men. With both sexes it was considerably more weighty than 'parents' wishes'.¹ The relative percentage scores were as follow:

	Interest in favourite studies	Parents' wish	Influence of admired teacher	Persuasion by teacher
Men	45	30	22	
Women	61	30	23	14 15

As to what traits in teachers appeal most to adolescents, or most repel them, it is difficult to generalize. Formal inquiry is hard to carry out. It is a delicate matter to ask teachers to distribute questionnaires on this subject to their pupils, or to ask pupils to answer them honestly. One can gather something from one's own recollections, from conversations with other adults, or with one's own children. One thing I am sure of, namely, that to the intelligent Secondary School pupil mere easy-going treatment of a class, with lax discipline, may be despised; and a man may be a firm disciplinarian and even work his pupils hard, and yet if he is just and fair and has a sense of humour, he may be very popular. Also the comments of some girl pupils on women teachers' carelessness as to dress or hair are sometimes acute.

The permanent influence of a teacher, of course, may not be realized by the young adolescent; suggestions may be sinking in more effectively than he knows. For that reason it is worth referring briefly to a very old inquiry which relates only to pupils in the United States, in which nearly 1,000 adults were asked to look back on their school days and say what appealed to them most or least in their teachers. Among these adults it was found that the ages of fourteen for girls and sixteen for boys, were those at which they felt most 'good' was done them.

'What seems to be most appreciated in teachers is the giving of purpose, arousing of ideals, kindling of ambition to be something or do something and so giving an object in

¹ See *B.J.E.P.*, 1934, 4, p. 245. The inquiry covered 348 students from four British Universities. Further details were given in the chapter on 'Vocational Guidance', p. 416.

life, encouragement to overcome circumstances, and, in general, inspiring self-confidence and giving direction. Next come personal sympathy and interest, kindness and confidence, a little praise, being understood; and next, special help in purity, the absence of hypocrisy, independence, personal beauty, athleticism and vigour are prominent.

'The qualities that inspire most *dislike* are malevolence, sarcasm, unjust punishment, suspicion, severity, sternness, absence of laughing and smiling, indifference, threats and broken vows, excessive scolding and "roasting", and fondness for inflicting blows. The teacher who does not smile is far more liable to excite animosity.'¹

Remarkably similar findings are reported in a recent inquiry among adolescents as to the qualities of the teacher they liked best and the one they liked least.²

Youth clubs. In a later chapter we shall refer to the relation between delinquency and membership of youth clubs; the evidence so far available on that relation is inconclusive. Even so, few would doubt, on the mere basis of the general psychology of adolescence, that it is desirable to expand the provision for healthful and cultural leisure pursuits and also of opportunities for useful service.

The highly successful Sherbourne Youth Club in Birmingham, though catering for the roughest types of youth, was able to impose compulsory attendance at some educational activity through the attractive power of its recreations, and still expand beyond capacity.³ As to the question of some compulsory service in clubs, I suggest that we cannot *assume*, as is often done in educational discussions, that, because some service is made

¹ See SANFORD BELL's article in *Pedagogical Seminary* (1900), 7 (1916), quoted by STANLEY HALL, *The Psychology of Adolescence*, 2, p. 386, and *Youth* (1912), p. 211.

² See A. T. JERSILD, *The Psychology of Adolescence* 1917, p. 200.

³ See *Youth in a City*, Board of Education Educational Pamphlet No. 117. Many details of other youth organizations in Birmingham are given in *Eighty Thousand Adolescents*, by B. H. RIED Allen & Unwin, 1920. This book also gives much information as to how about 170 'attached' and 550 'unattached' adolescents spent their leisure time, but the author admits that the samples may not be fully representative of the general population.

compulsory during adolescence, the youth will therefore become accustomed to this and so become less selfish and give service voluntarily later on. This, I suggest, would only happen if in doing such compulsory service the youth discovered a new satisfaction and interest which he realized he would have missed otherwise. It is possible indeed that the compulsion to carry out 'good deeds' may have the opposite to the desired effects. For example, in two large schools I have known, the interest in, and contributions to, a charitable or national object (which were regarded as practically compulsory) actually declined in the upper classes of the school, as compared with the middle forms. We should therefore look askance at such vague phrases as 'training youths to be co-operative or unselfish', which are so often used in discussions on education, and we should demand much more specific statements as to how such 'training' is to be made permanently effective.

Finally, so far as service is appealed for among our young people, it should surely be based on the ground that their help really is needed and useful, and not that it is 'good for them'. Indeed, it is only service given on such a basis that is, in fact, likely to be 'good for their souls', for it is that which will appeal to the best in them.

Self-government and training for citizenship. We may now consider the permanent value of various schemes of self-government which have been introduced into many schools and clubs. The prefect system in our great Public Schools has, of course, been long established; and the claim that it familiarizes boys with the idea that the need for discipline is not merely due to the arbitrary wishes of masters may be admitted. But the scope of the prefect system is limited, and the value possibly confined mainly to those who become prefects. The self-government schemes are wider and more democratic in form. An excellent pioneer example was that initiated by Mr J. H. Simpson in a lower form of a Public School with boys of thirteen to sixteen.¹ The form itself became a court to deal first with classroom duties and discipline, and later with its educational work. From a rather mechanical application of rules it came later to

¹ See his book, *An Adventure in Education* (1917).

discuss some underlying principles of discipline, and the advantages of co-operation. The reader must be referred to Mr Simpson's own delightful book for an account of the progress made. There is little doubt that in this particular case the experiment was a success so far as the work and discipline of these forms were concerned, though one feels that much was due to Mr Simpson's own wisdom in handling his prefects, and in the gradualness of the steps introduced. Moreover, once more we must beware of assuming that there will inevitably result a general habit of co-operation or a more sympathetic attitude later on towards legitimate authorities and laws in very different circumstances. As we saw in Chapter XIII, sentiments can be very specific.

What can we reasonably say on psychological grounds about the value of such experience of self-government? First, that to be of value as a training for future citizenship it must be a success, and the pupils must see that it is of value. To start such self-government when pupils are too immature may do more harm than good. Second, the young people must be led to consider the principles underlying their self-government, and be guided in the formulation of ideals which they can then see, from their own experience, are a real help to their *community* life, and so to themselves. This insight should be more possible through the experience they gain in working with others in a group towards a general control of that group for common ends.¹

¹ A fascinating account of a famous experiment in self-government in a colony of young delinquents will be found in E. T. BAZELEY's book, *Homer Lane and the Little Commonwealth* 1928..

CHAPTER XXXIV

ADOLESCENCE: PART II. INTELLECTUAL AND OUT-OF-SCHOOL INTERESTS

Intelligence and interests. We saw in earlier chapters that innate general intelligence is practically mature in some individuals by the age of about fifteen, and that some very clever boys of seventeen can do reasoning tests which are too hard for many University graduates. Thus, many youths of that age, in dealing with topics which do not require for understanding more experience than they have had, may prove more competent than their parents, which does not conduce to domestic harmony. The increased intelligence also makes the young people capable of more intellectual interests. On the other hand, some special interests have not previously had much time or opportunity to mature, and these may now undergo a marked development, especially in later adolescence. At first, however, they are very apt to be unstable, resembling in this the variability of emotional moods. The adolescent will often take up some study or hobby for a time with tremendous enthusiasm, whether it be carpentry or the playing of a musical instrument, the keeping of rabbits, or the writings of stories, the study of Esperanto or of Socialism. He may devote most of his spare time for weeks to a particular hobby and then drop it suddenly.

The practical problem arises as to how far one should attempt to discourage such rapid fluctuations. I would suggest that while it is good to encourage a thorough trial of such interests, it is a mistake to try to force an adolescent to persist in his first choice of activities, whether in the home or in the club; he may be engaged in what will prove to have been valuable experiments.

Reading interests. Several of the earlier investigations reported by Stanley Hall show that a large proportion of the persons

questioned experienced during adolescence a great increase of interest in reading. At that period girls tended to prefer stories of home or school, life and love; boys liked especially tales of adventure, including school escapades, with a later turning to semi-scientific stories, witness the great popularity in his day of Jules Verne.

Naturally one finds an intensified reading habit more frequently among the more intellectual. Thus among my University graduates, 90 per cent. of the men and 79 per cent. of the women reported a marked increase in reading during adolescence; among Professor Wheeler's workers it was 59 per cent.; and even among Dr Wall's adolescents, chiefly under sixteen, and about half of them having left school at fourteen, the percentages were: boys 51 per cent., girls 69 per cent.¹

These reports, however, only tell us about an increase in the amount of reading: what of the nature of the reading by the majority of young people? Here our information is far from encouraging. True the reports from public libraries show among juveniles the borrowing of a substantial number of books other than fiction — science, biography, travel, etc. But such readers are likely to be a selected group — apart from the fact that we know little as to how much of such books are read when they are taken home.

Even in actual inquiries among young people as to what they read most, and why they read it, results are often affected by selection. So much depends, for example, on the samples of books contained in the school or local libraries. Thus, in America, one investigator (Jordan, *Children's Interest in Reading*) found that 25 per cent. of girls of fourteen to sixteen years enjoyed 'adventure' stories, whereas another (Terman and Lima, *Children's Reading*) revealed that the girls of fourteen read adventure stories only occasionally.²

Sometimes, however, the fact that a group consists of picked people makes the results all the more striking, for example in

¹ See DR WALL'S *The Adolescent Child*, p. 102. Dr Wall tells me this group was partly the same as that dealt with in an earlier inquiry which I refer to later, of which the average I.Q. was only about 92.

² F. D. BROOKS, *Child Psychology* (1939), p. 355.

an early inquiry as to the leisure reading of 143 youths attending evening classes in the West Riding of Yorkshire. The very fact that they were attending voluntarily implies that on the average they would be likely to be more serious minded than most of their fellows. Yet, though the amount of time they said they spent in reading was surprisingly large (many saying they gave twelve hours a week or more to reading), the type of reading was mostly deplorable, 117 confessing they read only newspapers, weekly papers (such as *Comic Cuts*, *Butterfly*, *Boy's Friend*), and stories. Only twenty-six showed any sign of purpose in their reading. One boy said that the only time he got for reading was during tea in the boot shop where he worked; another ruled out Sunday on the ground that it was 'courting day when I'm not at work'.¹

This report was made over forty years ago, and no doubt things have improved. But the more recent inquiries in this country by Dr W. D. Wall among working-class youths, are not encouraging. One dealt with a group of eighty-eight girls and forty-seven boys (average age just under sixteen) employed in two Army centres. (It should be noted that the average I.Q. of this group was below normal, being ninety-two.) Nearly 10 per cent. said they never read books at all. Only 19 per cent. claimed to read non-fiction other than technical books. Among periodicals read, those providing romantic fiction headed the list.² In the larger group of adolescents dealt with by Wall (and referred to above) only 9 per cent. of the boys and 22 per cent. of the girls said they ever read poetry.

The reading of newspapers. As to the reading of newspapers, Dr Wall made a much wider inquiry among 670 adolescents from elementary and technical schools (aged 13 to 16; 11), and 459 in grammar schools (aged 13 to 16; 11). Illustrated papers (especially the *Daily Mirror*) and local papers were by far the most frequently read by nearly all age groups, in all types of schools. Very few read papers classified as 'superior'.³

¹ See article on 'The Teaching of English', by J. A. GREEN, *J.E.P.*, 1919, 2.

² 'The Decay of Educational Attainments among Adolescents after Leaving School', *B.J.E.P.*, 1944, 14, pp. 27, 28.

³ 'The Newspaper Reading of Adolescents and Adults', *B.J.E.P.*, 1948, 18, Parts I and II.

Of all thirteen sections of newspapers (news of the war, politics, general articles, sports), the order of popularity (first seven places) with the various groups was as follows:

TABLE XIII
Newspaper Reading Among Adolescents

Elementary and Technical Schools

Boys	Girls
News of the war	Comic strip
Cartoon	Pictures
Comic strip	Cartoon
Sports news	Advertisements
Pictures	News of the war
Humorous paragraph	Humorous paragraph
Military Correspondent	Readers' letters

Grammar Schools

Boys	Girls
News of the war	Readers' letters
Sports	News of the war
Cartoon	Pictures
Humorous paragraph	Articles of general interest
Readers' letters	Cartoon
Pictures	Humorous paragraph
Comic strip	Comic strip

The most notable fact is the popularity of the 'comic strip'. One boy frankly states of one: 'There is a piece in it called Jane, and she often goes about quite naked, and that is very good.' The chief difference between the Grammar and the ex-elementary youths is in the position of the Comic Strip.

Equally notable are the newspaper items which these juveniles say they *never* read, the most striking being the following:

Percentage Saying They Never Read The Mentioned Items

	Elementary and Technical Schools		Grammar Schools	
	Boys	Girls	Boys	Girls
Leading article	49	69	37	32
Political feature article	72	83	54	67
Articles of general interest	40	55	2	11

Here the most notable thing is the greater frequency with which the Grammar School pupils read articles of general

interest, though a third of them say they never read leading articles. On the whole, there is good evidence that, for the majority of adolescents, newspaper reading does not contribute much to political education.

In the inquiry among Senior School pupils, referred to in our chapter on 'Middle Childhood' (p. 520), Mrs Stewart found that the reading of 'bloods' and comics among boys fell from 90 per cent. at 11 ; 0 to 65 per cent. at 14 ; 0; among girls it fell from 80 per cent. at 11 ; 0 to 52 per cent. at 14 ; 0 (p. 16). Apart from the *Daily Mirror*, no paper was named by an appreciable number of boys and girls.

Mrs Stewart made a similar inquiry among the pupils of five Grammar Schools, including 645 boys and 801 girls, in Ilford and Wanstead districts.¹ Among newspapers, the *Daily Mirror* was still the most frequently read. The *News of the World* was read by nearly 40 per cent. of the boys of fifteen and over. Among periodicals, 'bloods' or adventures were still the most popular among boys, but dropped from 45 per cent. for the group eleven to fourteen years to 22 per cent. of the boys of fifteen or over. Comics, next in order, declined from 27 per cent. at eleven years to 2 per cent. at fifteen and over. Among girls 'comics' dropped from 35 per cent. at 11 ; 0 to 1 per cent. at fifteen and over, and 'bloods' from 24 per cent. at 11 ; 0 to 5 per cent. at fifteen and over. In every age Grammar School boys and girls read more 'bloods' but fewer 'comics' than the Modern School children. Next in order of popularity among the boys were sporting papers; among girls, women's magazines (e.g., *Wife and Home*).

How can one increase the reading of good books and newspapers? This is a question often put by teachers. It is not within our compass to discuss details of methods of teaching, but a few observations may be made. First, we need not be concerned greatly about the reading of popular adventures or crude love stories at early stages. Even the more intelligent youths probably pass through this stage; I confess I did myself. Second, we should suggest to children reading of a similar type to that

¹ See 'The Leisure Activities of Grammar School Children', *B.J.E.P.*, 1950, 20.

spontaneously chosen by themselves, but on a slightly higher level. In the past the gap between the two has usually been too great. Third, the school lending library should be well supplied with books of these better types and yet of a kind to appeal to all tastes of the adolescent, and several of the better type of newspapers should be included. It takes time for a person to become accustomed to a newspaper, to know where to find things wanted, and to realize that an article in a certain place is likely to be informative or interesting. As to poetry we have already touched on that in Chapter XXX.

Cinema. Among adolescents, as with younger children, there was in the years before the spread of television, a great increase in the frequency of attendance at cinemas, as compared with a decade or more before. As to television and its effect on cinema attendances, the reader should turn to our section on p. 522, where results for adolescents are included.

The Ministry of Education report, *Out of School* (1948), stated that in rural areas a much higher percentage of children of fourteen, than at twelve or eleven, attended the cinema at least once a week, the figures being 98 per cent. against 75 per cent. and 55 per cent. In urban areas the percentages were slightly higher. Mrs Mary Stewart, in her inquiry among Modern School pupils in 1946, points out that in spite of the high figures, only 13 per cent. of the boys and 24 per cent. of the girls mentioned the cinema as one of the five things they 'liked doing' best outside school, thus confirming one of the observations made in the Ministry of Education's report, *Out of School* (p. 38). It seems to me, however, that the children might not regard attendance at the Cinema as 'doing' something.

Among Grammar School children, Mrs Stewart found the attendance only about half as frequent as that of the Modern School pupils.

As to the *kind of films most liked*, among boys the first place for each of the ages of twelve to seventeen was taken by 'Crime' instead of 'Westerns'.

The most extensive investigation on the interests of adolescents in the cinema was made under the direction of Dr W. D.

Wall by research students in the Department of Education in the University of Birmingham.¹ This covered about 5,000 boys and girls between thirteen and seventeen in urban districts of the Midlands: (a) in Secondary Modern and Technical Schools, and (b) in Grammar Schools.

The lower frequency of attendance for Grammar School pupils was revealed again. The lower figures for girls as compared with boys is ascribed partly to the girls in this older group being required to help in the home; perhaps also a greater conscientiousness among girls in doing their homework may have had some effect. Another striking fact emerges in this inquiry – that nearly half the young people attended 'A' or 'AB' films and that over half of these children were under fifteen. Over half these boys, and over one-third of the girls, managed to get in alone.

Radio listening. As we saw in our section on Television, children who have T.V. in the house rarely listen to the radio, but some earlier results are still of interest for the psychology of adolescence. In her inquiry among Grammar School pupils already referred to, Mrs Mary Stewart found some marked changes in preferences from 11 ; 0 to 15 ; 0. (The last age included over 300 pupils.) The percentage of *boys* listening to *Plays and Serials* increased from 9 per cent. at 11 ; 0 to 32 per cent. at 13 ; 0, and 46 per cent. at 15 +; among *girls* it increased from 18 per cent. at 11 ; 0 to 51 per cent. at 13 ; 0, and 73 per cent. at 15 +. As to *Light Orchestra*, the percentage increased among *boys* from 2 per cent. at 11 ; 0 to 8 per cent. at 13 ; 0, and 32 per cent. at 15 +. More '*serious music*' (Symphony Concerts, etc.), however, only increased among *boys* from 2 per cent. at 11 ; 0 to 5 per cent. at 13 ; 0, and 7 per cent. at 15 +; among *girls* from 3 per cent. at 11 ; 0 to 6 per cent. at 13 ; 0, and 15 per cent. at 15 +.

It is regrettable to find as to News, Talks, and World Affairs, even at 15 +, only 9 per cent. of the boys and 9 per cent. of the

¹ See articles by DR WALL in *The Educational Review*, 1, No. 1, 1948, and No. 2, 1949. Also the article on 'The Effects of Cinema Attendance', by W. D. WALL and W. A. SIMSON in *B.J.E.P.*, 1949, 19. (See our note on *Television*, p. 522.)

girls mentioned that they listened to such items 'regularly' and with pleasure.

Television. As to this I would refer the reader to Chapter XXII, p. 522.

The maturing of special abilities. As we saw in the chapter on special abilities, these do not mature so early as general intelligence, or at least they do not reveal themselves as important in school work as is general intelligence. In early adolescence, however, their importance increases, though Burt found that even at the age of twelve to thirteen, general intelligence was still about three times as important as verbal ability, twice as important as arithmetical ability, and over four times as important as manual ability.¹ As we shall see in the next section, among children of thirteen who have not been promoted to a Grammar School, any new special abilities which may be developing do not seem to have any great influence on the *average* popularity of the various subjects; and this is not surprising seeing that the special abilities or interests develop to different degrees in different individuals.

In the Selective Secondary Schools, however (Grammar School or Technical High School), the more intelligent children have (so far as present methods allow) been selected; so that they are more on a level as regards 'g' than are the pupils in the Junior School or in the Secondary Modern School. Consequently, the influence of special abilities is greater, and the pupils tend more to sort themselves out as specially gifted (or weak) in Mathematics and Science, or in Languages, or in Literature, and in Art or Music – in which marked special abilities often reveal themselves earlier. With the natural tendency to take more interest in what one is 'good at', this increasing influence of special abilities tends to more inclination, in many pupils, towards specialization.

These increased differences in individual tastes must be borne in mind in considering the *average* popularity of school subjects in the next paragraph.

Interests and preferences in school subjects. In the chapter on

¹ See his article 'The Education of the Young Adolescent', *B.J.E.P.*, 1943, 13.

Middle Childhood (p. 513) we saw that in 1925, among London school children aged thirteen, Burt found that the most popular subjects with boys were Handwork, Nature Study, Drawing, and History; with girls, Drawing, Reading, Composition, and Handwork. The *least* popular subjects for boys were Dancing, Grammar, Spelling, and last of all Scripture; for girls, Geography, Spelling, Grammar, and Arithmetic. From the later inquiry (in 1934) by Mr J. J. Shakespeare in Worcestershire I give the orders of popularity only for the ages of ten (see p. 517). On the next page (576) I give the orders for the age of thirteen.

One notable fact here revealed is that there is little change in the orders for thirteen as compared with those for eleven. Among *Boys* in the 'Fast' classes, Handwork, Science, Art, and Arithmetic remain high; in the 'Slow' classes Handwork, Art, Physical Training, and Reading are the top four at both ages. Scripture remains low, but Spelling has dropped sharply to bottom for 'Fast' classes. For *Girls* also (fast and slow) the same four subjects come first at thirteen as at eleven, viz., Needle-work, Physical Training, Music and Singing, and Domestic Science. Spelling, however, has had a big drop in the Fast groups, as with the boys. It was already bottom at eleven with the slow ones.

Mr J. J. Shakespeare asked his pupils to give reasons for their likes and dislikes as to school subjects, and we may recall the results given in Table VIII (p. 517). At thirteen subjects were judged far more from the point of view of their *utility* than they were at eleven; at thirteen 45 per cent. of the reasons for liking (or disliking) refer to utility, or lack of it, against only 10 per cent. at eleven; whereas liking a subject because of being able to do it well declined to 30 per cent. from 49 per cent.

Shakespeare's inquiry was among typical Elementary School pupils, but with the most intelligent largely removed at 11+ to Selective Secondary Schools. We may add the results gathered by Dr W. D. Wall among his young workers, when they were asked on what subjects they would like to attend classes. It should be recalled that their average I.Q. was about ninety-two, so that, as Wall says, they represent about the

TABLE XIV
Preferences In School Subjects Among Adolescents

Boys (aged 13)

Fast classes	Slow classes
1. Handwork	1. Handwork
2. Science	2. Art
3. Art	3. Physical Training
4. Arithmetic	4. Reading
5. Physical Training	5. Geography
6. History	6. Science
7. Composition	7. History
8. Geography	8. Arithmetic
9. Reading	9. Composition
10. Literature	10. Hygiene
11. Poetry and Recitation	11. Literature
12. Hygiene	12. Music and Singing
13. Music and Singing	13. Scripture
14. Scripture	14. Spelling
15. Spelling	15. Poetry and Recitation

Girls (aged 13)

Fast classes	Slow classes
1. Needlework	1. Needlework
2. Physical Training	2. Physical Training
3. Music and Singing	3. Domestic Science
4. Domestic Science	4. Music and Singing
5. Art	5. Handwork
6. Handwork	6. Reading
7. Reading	7. Art
8. Arithmetic	8. Composition
9. Hygiene	9. Literature
10. Composition ¹	10. Nature Study
11. Literature	11. Scripture
12. Nature Study	12. Arithmetic
13. Poetry and Recitation	13. Hygiene
14. History	14. Poetry and Recitation
15. Geography	15. History
16. Scripture	16. Geography
17. Spelling	17. Spelling

¹ In Mr SHAKESPEARE's Table (*op. cit.*, p. 176) Art appears twice, apparently an error in the second case for composition, which is omitted from the Fast list.

lower two-thirds of the whole population age. The five subjects as to which the groups said they would 'very much' like classes were as follow:

Boys		Girls	
Studying mechanisms (petrol, steam, etc.)	47%	Dancing	71%
Handcrafts	44%	Typing	54%
Arithmetic	24%	Cookery	53%
Dancing	20%	Shorthand	44%
'Keep Fit' Exercises and Games		Music	38%
			20%

The practical, utilitarian, and recreative subjects are here even more prominent, as we might expect, with this group of lower average intelligence.

As to the Grammar School pupils, we have already discussed fully (in Chapter XVI) the results gained by Mr R. A. Pritchard. The chief interest for us at present is what changes take place in adolescence. Mr Pritchard's figures commence with twelve and a half, with adolescence begun in many cases (especially among the girls), and we do find remarkably few changes in the preferences from years twelve and a half to sixteen. The only notable ones are the following, averaging the lists for twelve and a half and thirteen, and for fifteen and a half and sixteen:

Boys (10 subjects) Latin drops from 7th to 10th.

Girls (11 subjects) Botany rises from 8th to 4th (bracketed).

Geography rises from 7th (bracketed) to 4th (bracketed).

Arithmetic drops from 5th to 8th.

Seeing that with boys French becomes slightly more popular with increasing age (rising from 7th (bracketed) to 5th (bracketed)), one suspects that the drop in Latin is due to the increasing demand for utility in a subject.

Aesthetic interests. There is general agreement that the appreciation of beauty - of Nature, of the visual arts, of music, or of poetry - increases in many during adolescence. The full maturing of intelligence during adolescence provides one condition

necessary, in varying degrees, for some forms of appreciation of beauty. The ripening of sex and its accompanying emotions and interests give a basis for other aspects of aesthetic appreciation – especially that of the human body. It is accompanied at the same time in most by an increased interest in the adolescent's own personal appearance. Table XV below gives some results from Professor Olive Wheeler's inquiry, and my own.

TABLE XV

Percentage Of Persons Reporting Increased Aesthetic Interests During Adolescence

	Valentine's University Graduates		Wheeler's Students		Wheeler's Workers ²		
	Men (100)	Women (120)	Men (100)	Women (100)	Men (50)	Women (50)	Aver. (100)
<i>Nature</i>	61	66	52	57	80	62	71
<i>Music</i> (Appreciation)	69	71	52	66	40	40	40
<i>Music</i> (Executive work)	54	66	—	—	—	—	—
<i>Art</i> (Appreciation)	54	62	36	49	60	20	40
<i>Art</i> (Executive work)	45	57 ¹	—	—	—	—	—
<i>Poetry</i>	56 ¹	57 ¹	55	71	40	18	29

¹ In my own inquiry this referred specifically to the writing of poems; in Professor Wheeler's only to an interest in poetry. All of Dr. Wheeler's workers had left school by thirteen years of age. (See her book, *The Adventure of Youth*, p. 55.)

² As there were only fifty men and fifty women workers, I give also the averages of these.

It will be seen that the majority of all these groups report an increased interest in Nature, a majority of the students report an increase of musical interest, and over one-third of all groups report an increase in the appreciation of Art.

In his inquiry among 196 youths of fourteen to seventeen,

Dr W. D. Wall obtained the following percentages for the frequency of increased interests:

	Boys	Girls
Music	33	72
Poetry	9	23
Nature (including animals, gardening, and biology)	45	40
Personal Appearance	66	86

It is not surprising that among so young a group with full-time schooling only till fourteen, and with the low average I.Q. of ninety-two, Dr Wall's adolescents report little increased interest in Poetry. The increase in Music is notable, but it is likely that this referred chiefly to dance music.

As to all the groups we have considered, we have to bear in mind the fact, already stressed, that adolescent interests are apt to be unstable. Thus of one group of 556 young people in the United States, about 84 per cent. reported an increased love of music 'often amounting to a passion, which however, soon passed'.¹ That was many years ago, and the fading of interest may have been partly due to lack of continued opportunity for hearing good music. Radio and television and the increase in musical appreciation work in the schools are making a great difference; and as we saw in the section on radio, there is a substantial number of adolescents who already like listening to Symphony Concerts and other excellent musical performances.

There can, finally, be little doubt that at least there is a better chance of rousing an interest in the appreciation of beauty of Nature, Art, Music, or Poetry, during adolescence than there is before that period. Educationists should try to secure that at any rate the adolescent should have the opportunity to discover whether he has within him the capacity for a lasting interest in any of these forms of beauty.

¹ STANLEY HALL, *The Psychology of Adolescence* (1916), 2, p. 23.

CHAPTER XXXV

BACKWARD CHILDREN, PROBLEM CHILDREN, AND YOUNG DELINQUENTS

I. BACKWARD CHILDREN

Backwardness, its meaning and frequency. The problem of backwardness in school is one for the psychologist and not merely for the practical teacher. Too often the latter tends to say merely that the child is lazy or stupid, and there's an end of it. A low degree of general ability is undoubtedly one cause, in fact, in most cases, the main cause, of backwardness in school. But the most thorough investigations show that, as a rule, there are several causes of backwardness, and some cases have nothing to do with a low intelligence. If backwardness is to be dealt with satisfactorily the precise causes must be discovered in each individual case.

First, let us be clear what we mean by backwardness. It is not merely what is implied by the label 'C' where the school is divided into three 'streams' -A, the bright; B, average; and C, below average. We may start with Burt's conveniently practical definition for general backwardness. A backward child, he says, is one who, in the middle of his school career (i.e., about ten and a half years), is unable to do the work of the class below that which is normal for his age.¹

A more precise definition, applying at all stages of the school career can be formed by using the idea of 'Educational ratio' or 'Educational quotient'. This is obtained as follows: First find the stage reached by a child (let us say of ten years) in each of the main school subjects.² By comparison with known average standards, we can then say that the child's mental age

¹ See his book, *The Backward Child*, 1937, p. 77.

² This can be done by using such 'Attainment Tests' as we have described in Chapter XXVI.

or 'Attainment level' in Arithmetic is that of the average eight-year-old; in Reading he may be up to the nine-year-old level; in Dictation up to the ten-year-old; and so on. Suppose we now take the average of these and find it is nine years. Then, as the child's real age is ten, his educational ratio is $\frac{9}{10}$, or expressed as a percentage his educational quotient is ninety. Burt's suggestion that we should describe a backward child as one whose *educational quotient* (E.Q.) is below eight-five, was widely accepted.¹

The magnitude of the problem of backwardness is indicated by the estimate that, taking the country as a whole, at least 10 per cent. of school children are dull and backward, as thus defined. In some slum and rural areas the proportion may reach 20 per cent.²

The use of the Educational Quotient has come in for criticism recently in some quarters, partly for statistical reasons which it would be unsuitable to discuss here; so far as practical reasons for criticism are concerned they seem to be based on the fear that teachers would specially concern themselves about bright pupils with achievement quotients below 100, a fear which shows little awareness of usual classroom conditions.

Another puzzle is said to be the child whose educational achievement is above his intelligent quotient. But this is understandable in some cases; for the achievement levels (in Reading, Arithmetic, etc.) are based on averages for the given age, and they depend partly on diligence and persistence, and on special abilities, so that a child above the average in some or most of these qualities may well surpass the average level which one would expect merely from his intelligence quotient.

¹ This was the definition adopted in the official Board of Education pamphlet, No. 112, on *The Education of Backward Children* (1937). This pamphlet is a useful introduction to the subject for the teacher. The latest Ministry of Education pamphlet which deals with backward children is that entitled *Special Educational Treatment* (Pamphlet No. 5), 1946. See Sections 45 ff. under heading 'Educationally Sub-normal Children'. These are described as 'children who are retarded by more than 20 per cent. of their age' (p. 20). The label 'mental defective' is dropped for the lowest grade, and the term 'ineducable' used for such.

² See BURT, *op. cit.*, pp. 86, 87; and F. J. SCHONELL's article on 'The Education of Backward Children', *Year Book of Education*, 1936, p. 797.

Caution is needed in interpreting the case of a very intelligent child whose educational achievement is below his intelligence quotient. The organization of school work being what it is, the very intelligent child is almost inevitably kept back by work and by teaching adapted more to the average pupil and by the teacher's reluctance to promote a much younger boy to a class of much older ones.

However, the critics seem to be satisfied with a direct consideration of the I.Q. and the attainment level, without the reckoning of an actual ratio or E.Q. Burt himself emphasizes that many other factors besides intelligence may affect achievement — e.g., special abilities, including memory, and emotional factors.

Causes of backwardness. In addition to general backwardness due to low innate general ability, there are many cases of specific backwardness, especially in arithmetic, reading, or composition; specific backwardness in reading, however, is so fundamental that it is likely to result in general backwardness.

Let us consider the facts revealed by Burt's most comprehensive research and reported in his book, *The Backward Child*. Burt selected 400 consecutive cases of backwardness, 200 being boys and 200 girls. Many kinds of facts were obtained about all these pupils: by standardized tests, by tests of physical conditions, by reports on home circumstances and family history, reports on school progress, temperamental characteristics, and so forth. A similar group of normal children was studied on the same lines, an essential supplement, of course, for any sound inferences to be made.

Over 95 per cent. of these backward children were below average intelligence: 60 per cent. had I.Q.s below eighty-five, i.e., were 'dull' as well as 'backward'.¹ For these latter as Burt says, 'The backwardness is irremediable'. For such children the only thing we can do is to see that their school work is adapted as closely as possible to their limited abilities. As in a large Primary School about one child in eight is likely to have an I.Q. of only eighty-five or less, we must expect about this pro-

¹ BURT, op. cit., Table 21, p. 444. Very similar figures were found by F. J. SCHNEIDER, see *Year Book of Education*, 1916, p. 75.

portion at least of backward children in an average school, and more in schools in poor districts.

At present there are great difficulties in arranging for special classes for dull children, and there is a tendency to promote children to a higher class because they are above the average age of their present class. Hence many children are struggling with school work which is quite beyond their powers, and this is apt to have a bad effect not only on school progress but also on their characters and their attitudes to intellectual studies. They may indeed have begun formal lessons in reading and arithmetic when they were too immature mentally to make real progress.

These facts emphasize the great importance of every child being given an intelligence test on its entry into the Infant School and again on passing to the Junior School. As to some extent conscientiousness and hard work and special help at home can compensate for general dullness, the low intelligence of the child may be concealed from the teacher, or poor work may be misinterpreted as due to laziness. Even mental defectives (or to use the present official terminology, children with such 'limited ability' as to have an I.Q. of about seventy or lower) may have a bright manner and are often socially adaptable. Especially in schools where there are no facilities for testing, and in towns or villages where there are no special schools or classes for mental defectives or dull children, even the mental defectives and the very dull may continue struggling with the ordinary curriculum through their school life and so learning much less than they might. I may recall the case of the fourteen-year-old delinquent who proved to be a border-line mental defective with an I.Q. of about seventy. His mental age was then about nine and a half years, yet he could not read words of three letters. Yet he had gone through an ordinary Modern School merely labelled 'lazy'. By properly adapted teaching he could at least have learned to read as well as the average child of his own mental age of nine. This is only a sample of many similar cases of an unnecessary degree of backwardness.

Complexity of causes of backwardness. Both Burt and Schonell found that in most cases of backwardness there were several

adverse factors (low general or specific abilities, temperamental weakness, physical disabilities, or bad home conditions). These other factors will naturally tend to be more important when the intelligence of the child is not much below the average; if general intelligence is very low, he is bound to be backward, whatever the other conditions are. But sometimes a child is not doing as well as his general intelligence would suggest. He is, to use the proper term, '*Educationally retarded*', which he may be even if very intelligent. So we must search for other causes.

In view of the complexity of the causes, Burt made a careful estimate of what seemed to be the *major* cause in each case, and some of his findings are well worth noting.¹

Poor intellectual ability (general or specific) was a major factor in nearly 60 per cent. of the cases. Temperamental defect was a major cause in about 9 per cent., making a total of nearly 70 per cent. of cases due primarily to psychological causes. Against this, physical conditions were a major factor in only 9 per cent. Bad home environment largely accounted for 12 per cent. and school conditions (chiefly irregular attendance) only 8 per cent.

Schonell's figures are in close agreement with Burt's. He found that nearly 8 per cent. of backward children were intelligent enough to do average work, but were apathetic, and lacking in persistence.² He points out that this represents a quarter of the *curable* backward cases in Modern Schools, since 70 per cent. are innately dull.

Absence from school. Burt uses the convenient term '*merely backward*' for those cases which can be cured. These are children with whom the teacher is most practically concerned, the children whose inborn intelligence and special abilities would enable them to do the work of the ordinary school, but who are educationally retarded through some other cause. It may be noted that a very bright child may be '*educationally retarded*' in the sense that he is not doing as well as he might in view of

¹ The figures quoted are from *The Backward Child*, Table 26, p. 106; and refer to the London Inquiry. Burt points out that the London statistics are less reliable.

² *Op. cit.*, pp. 800, 801.

his ability.)¹ Frequent absence from school, whether due to illness or truancy, is a main cause in over 10 per cent. of the cases. Often a child misses some important stage (especially in Arithmetic or the rudiments of reading), and can never catch up.² Weakness in a fundamental process, e.g., division or vulgar fractions, delays him throughout, whereas, if the particular gap in his knowledge were discovered, special teaching might bring him up to a decent level, and enable him to hold his own with the others. All this is a reason for careful testing in the most elementary stages of the work of children who are backward in a specific subject.

Specific types of backwardness. Specific backwardness in a particular subject is often due to weakness in a specific ability needed for that subject, e.g., verbal or numerical ability. We cannot deal here with the technique of discovering these. But as reading is so fundamental a subject, we may say that specific backwardness in reading (when intelligence is normal) is likely to be connected with specific disabilities in visual perception or in auditory perception, or in visual or auditory rote memory, which may need an expert's testing to reveal; sometimes emotional difficulties may further accentuate the weakness.³

Finally, the school authorities should face two facts: (i) that

¹ I agree with SCIONELL, *Year Book of Education*, 1936, p. 794, that the term 'retarded' should be reserved for cases where the academic achievement is below the mental capacity.

² In an inquiry as to the effects of absence in a Grammar School, it was found that short frequent absences had a worse effect on progress than one prolonged absence. See F. SANDON, *B.J.E.P.*, 1938, 8. No doubt absence for nearly a whole term would usually mean that a child would be made to repeat the term's work, whereas often with frequent absences he is expected to be able to catch up. I came across one intelligent girl whose algebra was much worse than her other subjects. By applying Ballard's New Type Examination, I found that she was uncertain whether x times x equalled x -squared or $2x$, although she was already doing simultaneous equations. It turned out that she had been away from school for a few weeks when this fundamental item was dealt with, and had been too shy to reveal her ignorance later by asking questions, and so had one well sometimes one thing and sometimes the other. As she understood the principle of equations, she would then get about 50 per cent. right, and so her ignorance remained concealed.

³ On backwardness in reading, and remedial teaching, the teacher should consult PROF. F. J. SCIONELL's valuable book, *The Psychology and Teaching of Reading*.

children who are backward owing to low general intelligence need to be grouped into special classes, and not only taught at a slower rate than the average children but also given a more practical and concrete curriculum; (ii) Children who are specifically backward in one subject, say Arithmetic or Reading, need individual teaching in that subject (or teaching in small groups), and often it is necessary to start again from the very beginnings, for which a Remedial Centre may be necessary.¹

As reading ability is so fundamental for school progress, I add here some findings of the most extensive recent inquiry by P. E. VERNON and A. F. WATTS (see the Ministry of Education Pamphlet No. 18, *Reading Ability*, 1950). Tests of Reading Comprehension were applied to over 3,400 children, ages 14; 9 to 15; 3 and to 2,800, ages 10 to 11 in representative schools in London and ten provincial centres. Backward readers were defined as those whose reading age was more than 20 per cent. below their chronological age. Among the fifteen-year-olds the proportion of backward readers was 30 per cent.; among the ten- to eleven-year-olds it was 23 per cent.

We have said little so far about character or temperamental weaknesses as causes of backwardness, as in such cases we have to deal with what are usually called maladjusted or problem children – to which topic we now turn.

¹ Special Remedial Education Centres have recently shown rapid advances by backward pupils through individual treatment. See articles by F. J. SCHONELL and W. D. WALL, *Educational Review*, 1949, 2, and by L. B. BIRCH in *B.J.E.P.*, 1950, 20. The latter reports an increase of over one year in the average reading age of children of eleven in Beeston-on-Trent, in the course of two years, partly through the special instruction of teachers in the Junior Schools in the teaching of backward children. Also the number of children whose reading age was two years behind their mental age had been reduced to less than half. In his Report to the Barrow-in-Furness Committee in 1949, my son, H. B. Valentine, recorded that among the eighteen children having special coaching at his Child Guidance Clinic, two hours per week in Reading, and two in Arithmetic, for only three months, there was an average gain of eleven months in Arithmetic and eight months in Reading, though the children were all below average in these subjects. With special instruction in Reading for three months a week, a child of only two hours a greater rate of progress – 14 months per month, was found in another centre, after a careful comparison with groups on the waiting list. See S. FRIEDMANN, *B.J.E.P.*, 1950, 28, p. 252.]

II. PROBLEM CHILDREN

Problem children. Though backward children are certainly 'problems', the term problem children is generally used to describe children whose behaviour or personality is in some way seriously abnormal. Common examples of such are truancy, thieving, excessive rebellion against discipline, temper outbursts, bullying, excessive timidity or apathy, and 'nervous' habits. Many such problem children are also backward, but not all. Backwardness due to poor ability may, in some cases, be a main reason why a child develops into a problem child, with defects in personality and conduct; but some 'problem' children are doing fair average work at school; and some are even above average. On the other hand, temperamental defects may themselves cause backwardness, as we have already seen.¹

The study of problem or maladjusted children has developed greatly in recent years, and their treatment is often a matter for the specialist; but the educationist and students of social problems should be familiar with some of the main facts, and it is only such that I propose to deal with here, especially as I have written on the subject elsewhere.² Teachers should, at least, be able to detect serious cases, which should be referred to the psychologists, and to discuss in the Parent-Teacher Associations, which are increasing in number, the commoner types of problems which trouble parents. It is, indeed, only through the gradual education of parents in the training of children that we can hope to reduce substantially the number of 'problem' children. For the home has left its impress on the child before he goes to school – even the Nursery School; and the home continues to have the child for the greater part even of his waking hours, till he leaves school. We must admit, however, that in many cases it will prove exceedingly difficult, and sometimes impossible to influence parents in the training of their children,

¹ SCHONER estimated that there are three times as many unstable children among backward children as among those making normal progress, *Year Book of Education*, 1936, p. 301.

² In *Parents and Children* (Methuen, 1933), especially Part III. Further guidance as to reading will be found in references in this chapter.

so strongly determined it is likely to be through innate emotional impulses – whether excessive protectiveness or ill-tempered domination, or so fixed by tradition or family custom.

The frequency of emotional symptoms and of troublesome behaviour. What is 'normal' behaviour in children? We must bear in mind the difficulty of making a clear distinction between the 'normal' and 'abnormal'. We have already seen (Chapter I) that about one-quarter of the adult population are suffering from some form of minor mental disorder, or betray some symptom commonly regarded as neurotic. We have also seen that a large proportion of children who develop satisfactorily later on have passed through a period of rebellious 'naughtiness' somewhere between the ages of two and five (Chapter VII, p. 86). Nail-biting has sometimes been referred to as a neurotic symptom, yet in several schools I found it in 57 per cent. of the children of eleven to thirteen, even in a Girls' Grammar School. In a much wider inquiry covering 2,350 children, L. B. Birch found 62 per cent. of the boys were nail-biters at age twelve, and 51 per cent. of the girls at age eleven.¹ We also found that compulsions to carry out meaningless actions, regarded by some as a sign of neurosis in children, were reported by about 90 per cent. of University students. We may agree that a prolonged compulsion, or one of a particularly troublesome type, may be the sign of something wrong; there is, however, a danger lest, because certain traits or symptoms are found in problem children, these symptoms should be thought to be inevitably the sign of something wrong. Before we can know what symptoms are really serious, we need control studies of children whose development is satisfactory, or at least of large unselected groups so that we can know what is usual or normal; and such control studies need to be made for all ages of childhood.

On this point some useful evidence as to early years is provided by an investigation on 239 un-selected school children between the ages of two and seven. These were in Nursery and Infant Schools, and were not selected because of any particular

¹ B.J.E.P., 1955, 83.

trouble.¹ Records were made as to the appearance of such symptoms as excessive restlessness, timidity, poor concentration, excitability, aggressiveness, speech difficulties, food faddiness, lack of bladder control, nervous habits, cruelty, etc. Mrs Cummings found these and other symptoms extremely common among the children. Thus about 30 per cent. showed excitability or restlessness, nearly 30 per cent. day-dreaming and poor concentration, 20 per cent. generalized anxiety, 21 per cent. lack of bladder control, 18 per cent. nervous habits. Lack of concentration increased with age, and so did lying and stealing. Boys showed more aggressiveness and obstinacy than girls.

In a later follow-up study of 142 of these children,² Mrs Cummings found that in the majority of children there was a gradual fading-out of the symptoms over a period of eighteen months; seventy-eight children showed improvement, while thirty-six showed no improvement, of whom only two were thought to have deteriorated. Of children *under* five, 87 per cent. were improved eighteen months later, whereas of children *over* five, only 56 per cent. had improved after eighteen months. There was a specially marked improvement in the younger children who had shown anti-social behaviour — aggressiveness, cruelty, etc., which fits in with what we have said about the general tendency for a period of aggressiveness to appear in young children under five. These children, it should be noted, were not having any special psychological treatment. Mrs Cummings does not give the precise number of children who showed no symptom at all, but she informs me that practically every child showed some symptom. She remarks that none of the children showed only one symptom.

In such an inquiry, clearly much would depend on the standard set by the investigator and teachers co-operating, for what should be regarded as an 'emotional symptom' or problem conduct. In general, teachers (and even parents) are apt

¹ See article already referred to in Chapter XXXI by JEAN D. CUMMINGS, 'The Incidence of Emotional Symptoms in School Children', *B.J.E.P.*, 1944, 14, p. 151.

² *B.J.E.P.*, 1946, 16, p. 163.

to regard as serious the conduct which is most troublesome to them, and to underestimate the importance of timidity, anxiety, and inner personality troubles generally. Apart, however, from the proportions of the various forms of maladjustment, it is clear from Mrs Cummings' investigation that we may expect such types of behaviour in a large proportion of children between 2 ; 0 and 6 ; 0, and that they are not to be regarded as signs of abnormality.

Frequency of problem children. We must bear in mind that Mrs Cummings' inquiry referred to very young children, chiefly below five. Emotional disturbances such as she found so common with children of four or five might be serious indications in children of nine or ten. As age increases, we expect progress at least in self-control, and less variability in emotional mood. Indeed, as Burt has put it, 'To a large extent, the behaviour of a child who is temperamentally subnormal resembles that of a child considerably younger than himself.'¹

As to the frequency of neurotic symptoms in later years, estimates naturally vary according to the standard set by the investigator, and the sample of children studied. In his survey of subnormal children in London Elementary Schools, Burt found 4 per cent. with 'neurotic' symptoms, so marked as to need special treatment; in another 13 per cent. they were bad enough to make further investigation desirable.² Dr Lloyd found about 6 per cent. of average children in Birmingham, and 12 per cent. of backward children suffering from 'defective nervous' conditions.² In his later study of backward and non-backward children in the same districts, Burt found among the latter (control) groups nearly 10 per cent. 'excitable'; that would mean on the average four pupils in a class of forty who were impulsive, fidgety, with 'hasty actions and rash judgements', and weak in concentration.³ In the control groups Burt also found about 15 per cent. with minor neurotic symptoms.

Main types of problem children. Different classifications of kinds of maladjustment have been made by various investigators. We

¹ *The Subnormal Mind*, 2nd edit. p. 326.

² *Op. cit.*, p. 336.

³ *The Backward Child*, pp. 542, 543, 544.

may start with Burt's broad distinction between (*a*) the aggressive and excitable, and (*b*) the repressed, or 'nervous', based on his grouping of the emotions and innate impulses (sthenic and asthenic), which we have already discussed (Chapter XII, p. 147). But these broad types reveal themselves in varied ways, and the final listing of types of maladjustment are usually more specific. The excitable we have just described; the 'aggressive' may reveal himself in bullying, or rebellion against discipline. In the repressed type fear and submissiveness are excessive; there may be excessive liability to fatigue, and to anxiety states. The final outcome in behaviour of such types of temperament, however, will vary with the environment, and the specific form of misbehaviour, e.g., lying, may superficially be the same when it is the outcome of an aggressive type reacting strongly to opposition, or of a nervous type fearing exposure or punishment. A careful study of the individual personality of the child and of the environmental situation is necessary in each case.

Is bad training always responsible for problem children? Let us turn now to the more serious cases of maladjustment, such as now frequently come before the educational psychologist or the Child Guidance Clinic. There is a tendency to attribute these almost entirely to bad home environment and training. 'There are no problem children,' it has been said, 'only problem parents.' Now it is, of course, true that bad training can be the main cause of a child's 'maladjustment', but the plain facts seem to be against the above extreme statement. We know that in many homes in which children are well cared for, and where treatment is fair and wise, *one* child will prove to be difficult or neurotic, while the rest are normal. Precise figures on this topic are more easily found in reference to young delinquents. Thus, of 600 young delinquents examined, only 22 per cent. of their brothers and sisters were themselves delinquents.¹ If the delinquency was entirely or largely due to the bad home influence why did four out of five of the brothers and sisters survive it – in spite of the influence also of the delinquent himself?

The follow-up study of 500 problem children treated at the Tavistock Clinic, made three years or more after the treatment

¹ N. D. HIRSCH, *Dynamic Causes of Juvenile Crimes*.

was finished, states that 'some children' recover in the face of apparently insuperable difficulties, and some retain their symptoms for reasons which often remain obscure.¹ As we have seen (Chapter V, p. 61), Nature allows extreme individual differences at birth, even in physical capacities essential to life. We saw that there is evidence also for great inborn differences in intelligence, and that marked differences in general activity, in assertiveness, temper, etc., reveal themselves in the first year or two among children in the same environment. We must expect, then, to find extreme assertiveness or submissiveness or timidity in some children, and it is not surprising to find many problem children in whom innate temperamental defects seem to be the chief cause of the trouble. We shall meet further evidence in our study of environmental factors that we must expect to find some children, at least at an early age, excessively aggressive or ill-tempered or 'nervous', whatever their early treatment may be, while others may be neglected, or even ill-treated at home, and yet remain well-balanced and decently behaved.² Indeed, in one very thorough inquiry about children in a Reception Centre, 141 children were studied who came from 'problem families', i.e., families known for child neglect, dirt, and squalor. About a quarter of the fathers were often drunk, a third of them cruel and brutal to wives and children, a third of the mothers sexually loose, yet the proportion of children from such homes who were 'disturbed' in behaviour was actually rather less than in the general run of children admitted to the Centre.³ They were probably rather 'tough' by nature, and perhaps also relieved to be away from home.

The effects of home environment. The influence of broken homes, of dissension between parents, and of bad discipline are amply

¹ *Tavistock Clinic Report for 1938*, p. 21.

² See my book *The Normal Child, and Some of his Abnormalities*. Pelican Books, 1936. A recent inquiry about fifty Institution children whose parents and near relatives were known concludes that, for social maturation, constitutional factors are at least as important as environmental. See F. BOYDAN, *J. of Mental Science*, 1950, 96.

³ See *Deprived Children*, by Dr HILDA LEWIS. Nuffield Foundation and Oxford Univ. Press, 1944, p. 30. Dr Lewis also notes that separation from the mother in the earliest years, though usually harmful, was followed by satisfactory development in one-third of the cases, p. 122.

illustrated in the reports of Child Guidance Clinics.¹ No one, I think, would dispute that a feeling of security in the home, and affection by the parents, especially the mother, are the first essentials for the satisfactory development of the child. Here we may consider first an investigation which has the advantage of dealing also with a control group of ninety-three normal children. It was made in the Cambridge Clinic.² I give some of the main findings with comments:

(1) Of the 112 problem children referred to the clinic, about three-quarters were boys. This excess of boys, where found, is probably due to the greater troublesomeness of the traits characteristic of boys. In some clinics, however, the proportion of girls has been much greater.

(2) Inadequate or improper discipline at home was found in 66 per cent. of the cases. (We shall find this factor of discipline constantly recurring.)

(3) The problem children came far more frequently from broken homes than did the normal children. But this was thought to be due to a considerable extent to the effect of the instability of the parents.

(4) The proportion of *only* children was the same in both groups.

As to the frequency with which problem children come from 'broken homes', we cannot assume that this is merely due to environmental influences. Homes are often broken through the unfaithfulness of one partner, through violent temper or drunkenness of one or both, and through desertion. In most of such cases there may be some serious temperamental defect in one of the parents, or even in both parents, which may itself be transmitted to the child.

¹ The reader may be referred for details to the frequent reports of large clinics such as London, Birmingham, Bath, and the Tavistock Clinic. For an admirable discussion of American findings, see CARL ROGERS, *The Clinical Treatment of the Problem Child* (1939). An interesting report on sixty Grammar School pupils referred for maladjustment to the Liverpool Clinics is given by M. CHAZAN, *B.J.P.*, 1950, 29.

² See H. BANNISTER and M. RAVDEN, 'The Problem Child and his Environment', *B.J.P.*, 1944, 34, Part 2, and 'The Environment and the Child', 1945, 35, Pt. 9.

In a report on the influence of Broken Homes on maladjustment of children referred to Glasgow clinics, the investigator came to the conclusion that the mere disruption of the home may have much less effect on the child than is usually assumed. In a broken home the remaining parent may supply special affection and protection. In 96 cases out of 150 parental disharmony was a major factor.¹ Parental disharmony is liable to have a disastrous effect on the discipline of the child, especially when they differ about discipline. For example, in one inquiry about the home life of young delinquents it was found that in 41 per cent. of the 133 families studied the parents disagreed about the discipline of their children, *especially of the delinquent child.*²

Before discussing discipline more fully I must refer to an important recent factor-analysis study by Cyril Burt and Margaret Howard which sets home-influences in a background of other factors causing maladjustment.³ They studied 394 cases of maladjusted children (ages six to fourteen) with a control group of the same number of normal children in the same schools. They emphasize the variety of causes rather than the predominance of one.

The highest correlation of maladjustment was with emotional instability (0·47), the next with general educational backwardness (0·42), and the third with lack of affection in the home (0·34).

Discipline in the homes. This factor appears strikingly in the most careful inquiries as to maladjusted children. I have referred above to the findings in the Cambridge Clinic. Burt, in his study of 200 young delinquents, found that defective discipline of some kind gave a much higher correlation with crime than did defective family relations; and too lax and easy-going discipline was a much more frequent factor than over-severe discipline. In an even wider inquiry as to juvenile delinquency, which we shall discuss in the next section, defective discipline

¹ See article by JEAN ADAMS, *B.J.P.*, 1936, 16, p. 45.

² W. HEALEY and A. F. BROWNE, *New Light on Delinquency and its Treatment*, 1936, p. 36.

³ See their paper in *B.J.P.*, Statistical Section, 1932, 5, p. 39.

was again found to be the main factor. Among seventy-eight cases of problem children referred to the Birmingham University Institute of Education Remedial Centre, it was found that, while there were only 12 per cent. in which the discipline was too severe, there were 25 per cent. too lenient, and 20 per cent. too protective. In 25 per cent. there were different standards of conduct set up by the mother and father (see *Centre Report for 1948-9*). In a long experience as a member of the Birmingham Education Committee, in interviewing parents about the absence of their children from school, I found over and over again evidence of lax or markedly inconsistent discipline of the children who had played truant, or had been allowed to remain at home on the flimsiest excuse. Again, in dealing with 'problem children' brought to me by anxious parents, I have almost invariably found weak discipline a main cause of the trouble. Many mothers give way finally to a child's temper after an attempt at firmness. I have known mothers who, in the presence of the child himself, will confess (sometimes with an indulgent smile) that the child will not do as she tells it. In other cases the father is excessively severe, and the mother over-indulgent, and the child plays one off against the other, or reacts strongly against the firm discipline of one.

It is not surprising that in some cases the mere removal of a child to a foster home has been followed by reform (60 per cent. of even serious cases), and even when the treatment in a Child Guidance Clinic has failed.¹ There remain, however, many children with apparently innate temperamental abnormalities for whom removal proves inadequate.

Some principles of discipline. In conclusion, I propose here only to summarize a few main principles as to discipline, as I have discussed this question of home and discipline fully in another book.²

(1) Discipline should not be merely repressive. It should aim at eventual self-control. Encouragement of positive interests and healthy activities should proceed parallel with restraint.

¹ See *Report of the Birmingham Society in Aid of Nervous Children* (1939).

² See *Parents and Children* (Methuen, 1953).

This we have discussed under different headings in several earlier chapters, especially those dealing with unconscious impulses and repression.

(2) The standard of conduct expected should not rise too suddenly. Our evidence above of the behaviour of children of two to seven is an example of what we may expect at such early ages.

(3) Discipline and rules should be consistent. The gains of steady control over a short period may be entirely thrown away by one relapse.

(4) There should be close co-operation between parents, and as far as possible between home and school, though clearly the latter is not possible when the home standard is grossly inadequate.

(5) The manner of discipline, and of treatment generally, must be such that the child does not feel that he is unloved. That a child needs to feel the security of a home is so generally admitted, and so emphasized nowadays, that I feel no need to stress it here.

(6) While corporal punishment may be rarely desirable in school, it may be necessary in some cases for young children, and some of the arguments that it is degrading, etc., are unjustifiable. The preference of school pupils of younger ages for corporal punishment over other forms we have already indicated.¹

III. YOUNG DELINQUENTS

Broadly speaking the term delinquency refers to the breaking of some law. Such offences as stealing and the damaging of property may, as we have seen, occur in young children of under eight or nine, and in the case histories of clinics are sometimes listed as delinquencies. The term 'juvenile delinquents', however, usually relates to adolescents who are old enough to come under the purview of the juvenile courts; but psycho-

¹ A general discussion of corporal punishment is given in my *Difficult Child and the Problem of Discipline* (out of print) and a briefer one in *Parents and Children* (Metuchen, 1953). A useful survey of research in Great Britain is given in an article on 'Maladjusted pupils' by F. J. Schonell in *H.J.F.P.* 1952, 22. See also the symposium on *Child Guidance* in the same volume.

logically it is impossible to fix a definite age at which 'responsibility' begins, if only because so much depends on mental rather than chronological age.

Frequency of juvenile delinquency at different ages. In the popular Press one often sees reports that in some recent years there has been a great increase in juvenile delinquency. Such statements should be received with caution for several reasons. First, the numbers of adolescents, say of twelve, thirteen, fourteen, or fifteen (the 'peak' years) vary greatly because of the changes in the birth rate, especially during and after a great war. Second, as compared with much earlier years, more offences are brought before the courts. Third, sometimes a more temporary cause is at work, e.g., during war, the absence of fathers from the home.

In estimating the age at which delinquency is most frequent, we must then take into account the total number of young people in each age group. When that is done, we find the following results for the years 1937 and 1938.¹ I give only approximate numbers of youths (found guilty) per 10,000, of each age group, and only for the ages of ten to nineteen. I have averaged the figures for the two years.

Boys		Girls	
Age	Frequency	Age	Frequency
10	71	10	4
11	95	11	6
12	114	12	8
13	134	13	8
14	113	14	8
15	113	15	10
16	107	16	10
17	85	17	10
18	77	18	11
19	72	19	10

As regards the early years, we must bear in mind a frequent reluctance to bring young children, and especially girls, even before the children's court. But apart from that, the peak age for boys was clearly not later than thirteen, which, as pointed out in Chapter XXXII, refutes the assumption often made

¹ Figures quoted from *Young Offenders*, by A. M. CARR-SAUNDERS, H. MANNHEIM, and E. G. RHODES, 1942, p. 52.

that the main cause of juvenile delinquency is the removing of the child from school at too tender an age and plunging him into the dangerous life of the young worker. That, however, still leaves it possible that this latter is the main cause for those who only succumb in later adolescence. It is worth noting that figures published in the daily Press in April 1949 show that by then the peak age for boys had risen to 14+, just at the time when the school-leaving age had been raised to fifteen.

The *Criminal Statistics Report* for 1955 shows the peak age for boys still fourteen and for girls fourteen to seventeen. The *Report* for 1957 shows that for all 'indictable offences' the numbers found guilty were proportionately higher for the age groups thirteen to fourteen, even than for seventeen, eighteen, nineteen, and twenty, in spite of the great increase of crimes of violence in the older groups.

Girl delinquents were far fewer than boys, and the peak age for girls was much later (eighteen); no doubt this is due largely to the fact that proportionately larger numbers of delinquencies among girls are connected with sex, and to the reluctance of teachers to report girls for theft.

Types of crime. Carr-Saunders and his colleagues found theft much the commonest form of offence among boys. Among the male arrests in London for the years 1935-37, the percentages of all crimes were for theft, about 77 per cent. for ages nine to twelve, 80 per cent. for thirteen, 72 per cent. for fourteen, and 66 per cent. for fifteen years. From another inquiry made in Birmingham on 966 boy delinquents just before the Children and Young Persons Act of 1933 raised the age of criminal responsibility to eight, we find similar figures.¹

Home conditions and juvenile crime. The book referred to above (*Young Offenders*) gives a record of a wide investigation by the authors in reference to 2,000 boy delinquents in London and the provinces. Corresponding to each young delinquent, a non-delinquent was selected, by the head teacher of his school, who was of about the same age and might reasonably be regarded as a control case. There would, however, probably be a ten-

¹ W. L. CHIASS, *B.J.L.P.*, 1938, 8, p. 78.

dency for the head to pick exemplary boys.) The age range was from eight to sixteen.

The first analysis was concerned with what the authors call the 'normal' family compared with 'broken' homes; the latter included also homes to which there were various older relatives added. The proportion of delinquents coming from 'normal' families was about 67 per cent.; that of broken families under 80 per cent. The main fact emerging here, writes Mr Rhodes, is that a large proportion of delinquents belong to quite ordinary families (p. 63). In Mr Chinn's Birmingham inquiry it was found that 68·5 per cent. of the delinquents came from 'normal' homes.

As regards *home discipline*, however, a decided difference was found between delinquents and controls. In less than 60 per cent. of the delinquents' homes was the disciplinary attitude normal, whereas the figure for controls was about 88 per cent.

Coming to a closer study of the youths themselves, we take the figures for school reports, again considering only homes where the atmosphere, as measured by the health and relations of the parents, was normal. Confining ourselves to these homes with 'normal atmosphere' we find the striking result that there are hardly any boys who had 'bad' conduct reports at school, even among the delinquents — less than 1 per cent. for delinquents in London, and under 4 per cent. in the provincial towns. But only *one* among 990 controls had a bad conduct report — evidence that these controls were a very special selection. As to *attainment* for the given age at school, the difference is appreciably greater, 'below normal' covering 25 per cent. of the delinquents, but only 9 per cent. of the controls.

This inquiry did not profess to be a psychological one. For that we may turn to the much more detailed analysis in the research reported by Professor Burt in his book, *The Young Delinquent* (1925).

Burt's inquiry. Burt studied 200 young delinquents (not all referred to the courts), and a control group of 400 non-delinquent children coming from similar homes in the same districts of London. He gathered information as to the heredity of the young delinquents, the conditions of poverty, or otherwise, of

the family, the relationship between husband and wife and between parents and children, the presence of alcoholism in the parents, and as to the conditions of discipline in the home - whether there was excessive severity towards the children, or the reverse. The intelligence of the young people and their positions in school, backward or otherwise, were also noted. We may summarize the more important results. First, as to *intelligence*, it was found that about four-fifths of the delinquents were below average ability, i.e., had I.Q.s below 100. Among normal children, of course, about half would have I.Q.s of 100 or below. But Burt stresses the great range of intelligence among his delinquents; 8 per cent. had I.Q.s of 105 or over.

A very thorough more recent analysis by Dr M. I. Dunsdon of children and young persons brought before a Juvenile Court in 1939-45 confirms Burt's findings, both as to the large proportion of low intelligence and yet the wide scatter of intelligence. Dr Dunsdon found also much retardation among the delinquents and even more serious social immaturity, as estimated by The Vineland Maturity Scale.¹

Burt found that the existence of actual criminality in the parent did not seem to be a dominant factor in causing crime. On the other hand, minor lapses in moral behaviour or conduct did appear in 54 per cent. of the families of the delinquent, and as many as 11 per cent. of their relatives were actually sentenced for crime. Temperamental disturbances with 'moral symptoms' occurred more frequently in the families of the delinquents. Yet in spite of all this, removal to another and better environment often brought about a complete reform in the young delinquent.

The following table gives a selection of the striking differences between *hereditary traits* appearing in families of the young delinquents as compared with those of the non-delinquent.

	Delinquents	Non-delinquents
Sex irregularity in mother	18·0%	4·0%
Alcoholism in mother	12·2%	3·2%
Alcoholism in father	13·7%	5·7%

¹ See M. I. DUNSDON, *B.J.P.*, 1947, 38.

There may be, as Burt points out, hereditary traits which favour criminal tendencies, without being in the full sense 'moral taints'. Indeed, I would suggest that sometimes a quality which may in itself be a desirable one when held in check by some other qualities may nevertheless be conducive to crime when unaccompanied by those qualities. I have known, for example, of a youth whose impulsive generosity and love of being hospitable to friends actually led sometimes to petty theft, sometimes even to theft of money from his friends themselves in order to spend it upon them.

As to *poverty*, 50 per cent. of the young delinquents came from poor, or very poor, homes, while only 30 per cent. of the population as a whole could be classified thus by similar standards. Yet as half of the young delinquents came from homes described as 'comfortably off', poverty could not be regarded as the most influential cause. As with younger problem children, defective family relationship seemed to be a most important influence; not only alcoholism but also friction in the home, and various troubles caused by overcrowding, were pre-eminent. Burt was not content with the rough classification of the 'broken home'. He distinguished: (a) the poor home; (b) defective family relationships (the nearest to the usual use of this term 'broken home', but including 'only child'); (c) the vicious home; and (d) homes with defective discipline.

Defective discipline was found in 61 per cent. of the homes of the delinquents against only 12 per cent. of the homes of the non-delinquents, giving the highest correlation with delinquency of all single factors, namely, 0·55, against 0·39 for vicious homes, 0·33 for defective family relationships, and 0·15 for poverty.¹

Excessive severity in discipline was reported in 10 per cent. of the cases studied, but the laxity of discipline was more injurious, as it occurred in 25 per cent. of the cases. This is of interest in connexion with what we have seen in the section on

¹ *Op. cit.*, p. 101. Remarkably similar figures were found by one of my research students, Mr E. W. HUGHES, in a study of about 750 young offenders put on probation in Coventry. He found that in 65 per cent. of the homes there was lack of good discipline and of co-operation with the probation officer. See his article, *B.J.E.P.*, 1943, 13, p. 119.

Problem Children about the relative harmfulness of excessively severe and of very lax discipline.

Maladjustment of the delinquent to his particular *employment* seemed to be one factor in causing crime, but not nearly so important as the home conditions.

Emotional instability was a marked characteristic of the young delinquent, the figures being as follows:

	Ordinary population	Young delinquents
Temperamentally defective	10%	9%
Unstable	10%	34%

A more recent inquiry, on over 2,000 Glasgow boys who were followed up for three years after leaving school, found delinquency especially associated with low school achievement, failure to hold jobs, residence in slums and overcrowding, and other members of the family convicted of crime.¹

For the main causes of the recent outburst of more violent misdemeanours, we must wait the researches of psychologists and psychiatrists as to the possible associations with home conditions, lack of early discipline, the loosening of moral standards, and familiarity with the idea of violence in parents and older groups at least during the War, together with any innate pathological factors in the juveniles themselves.

It should be noted that the recent increase in juvenile delinquency is by no means confined to Great Britain. Thus, in the United States it was found that it increased by 65 per cent. in 1952 over 1940, though the population (ages ten to seventeen) decreased by 5 per cent.²

Treatment and its effects. This is not the place for a full discussion of the treatment of delinquency. We can only emphasize a few points, especially that, as with the younger problem child, the first aim should be prevention. This leads to the same task of dealing with the parents and with wider problems of housing, health, moral training in home and school, provision for

¹ See T. FERGUSON, *The Young Delinquent in his Social Setting* (Oxford Univ. Press, 1952).

² U.S. Child Bur. Statist. Ser. 1954, No. 18.

suitable recreation, the avoidance of too great strains in school work and of vocational misfits by expert guidance.

As to the effectiveness of early and wise treatment, we may refer to three reports. First that of Burt, who followed up the careers of 137 of his young delinquents, for at least one year, and for many much longer. With about half of them the recommended treatment was followed, and of these no further lapse occurred during the time observed in 62 per cent. of the cases, another 38 per cent. showing some improvement. Of the cases where the treatment recommended was not adopted, 12 per cent. underwent a spontaneous cure, and 23 per cent. made moderate progress. Among the remaining 65 per cent., there was either some 'deep congenital disorder' or 'hopeless home conditions'.¹

Burt's cases, we must recall, included many who had been referred by the school teachers and others, without the children having been summoned by the courts. We have, however, wider figures in reference to children actually placed on probation by a juvenile court. A Home Office report of a three-year follow-up of over 2,300 offenders states that of children under fourteen, 65 per cent. were proving satisfactory; of those fourteen to sixteen, the percentage was sixty-eight, remarkably like Burt's figures.² Further evidence is given in the report, already referred to, by Mr E. W. Hughes on 750 young probationers in the city of Coventry during 1938 and 1939. For those undergoing their first probation, he found slightly higher percentages of improvement, taking, as a sign of that, their not having to appear again before the court for the period of five years considered. Out of 330 cases, 74 per cent. were still going straight (p. 16). Mr Hughes claims, with some justification, that the probation system *can* be a success. Obviously that depends to a very high degree on the probation officer. Unfortunately a recent report on ex-Borstal inmates presents a less-favourable picture, those returning to ordinary life showing a high and early casualty rate.³

¹ *The Young Delinquent* (1925), p. 608.

² *The Probation Service* (H.M. Stationery Office).

³ See *Annual Report of Council of Central After-care Association*, 1958.

One aspect stressed by Mr Hughes was the large proportion of the probationers who had never been members of any youth organization, or had given up membership after a short time. As this topic is now very much to the fore and so much is expected of youth clubs, we may deal with it more fully.

Delinquency and youth clubs. When considering 'what can be done' to keep our youths out of mischief or worse, one naturally thinks of the provision of legitimate outlets for youthful energies and interests; and this has been one of the main reasons for the recent widespread establishment of youth clubs.

In several inquiries it has been shown that juvenile delinquents are less frequently members of youth clubs than are their opposites in the control groups. Thus Mr W. L. Chinn found that among the juvenile delinquents in Birmingham only 31 per cent. belonged to 'recognized social organizations' (including Sunday schools), while among the controls 61 per cent. belonged to them.¹ (It should be noticed that Chinn included children from the age of ten up to fifteen. The figures for children between fourteen and fifteen were: delinquents, 17 per cent.; non-delinquents, 53 per cent.)

One important question, however, has to be borne in mind in considering such results. We do not know how far such differences are due to the fact that it is the 'good', socially well-adjusted boys who choose to become members of clubs, while those more inclined to delinquency are indifferent to such clubs; or how far the difference is due to the good influence of the clubs upon the boys who do join them.

Carr-Saunders and his colleagues found that where the homes were fairly satisfactory, regular club membership seemed to make very little difference, so far as delinquency was concerned. It is among children from homes with bad influence that we should expect clubs to be most valuable.

Attendance at church and evening schools. Similar considerations as to selection must be borne in mind in examining the records as to attendance at church (including Sunday school, or evening schools. The figures for regular attendance at church given in *Young Offenders* reveal a difference of some 10 per cent. be-

¹ *Op. cit.*, p. 82.

tween delinquents and non-delinquents, but it is rather striking that 29 per cent. of the London delinquents and 41 per cent. of those in the provinces claimed to be regular attendants at church (p. 87). (The figures for controls were: London, 39 per cent.; Provinces, 51 per cent.)

The figures for *attendance at evening schools* show a greater difference – only 7 per cent. for the delinquents, nearly 33 per cent. for the controls. Again we cannot, of course, assume that the evening schools had much direct influence on the tendency to delinquency or that compulsory attendance at evening schools would reduce delinquency. The main reason for the difference is again probably that the more serious, ambitious, or obedient pupils *would* attend evening schools, though, no doubt, occupation on some evenings would lessen the temptations to commit petty offences.

Conclusion. Only a few of the aspects of this great problem have been discussed, but I have tried to select the most fundamental ones from a psychologist's point of view. It remains to recall or stress some conclusions. First, as with maladjustment in early years, there are usually several causes at work in producing delinquency. We must beware of jumping to a conclusion because of one very obvious factor, which may not be the most important. Second, there is a danger of overlooking the basic facts as to inborn tendencies, a danger especially great for many admirable people who throw themselves enthusiastically into movements for social reform. Vigour and devotion are needed in such service, and scope for it is unbounded. But in the long run more harm than good will result from too great optimism.

We have already pointed out how often the problem child appears in good homes and how often a child remains well adjusted even in the worst type of home. We have also seen (p. 591) that the great majority (four-fifths in one wide investigation) of the brothers and sisters of young delinquents are not themselves delinquents, though living in the same homes, and Burt long ago emphasized the importance of inborn factors – the main cause, he concluded, in well over one-third of his cases.¹

¹ *Op. cit.*, p. 605.

Strong support to our general view is afforded by one conclusion of the authors of *Young Offenders*. They point out that many youths seem to survive the worst possible environment, while others succumb even in the most favourable environments; e.g., over 40 per cent. of the delinquents came from normal homes where the atmosphere and discipline seemed satisfactory; while nearly 30 per cent. of the non-delinquents came from homes without such normal atmosphere. This is described in physiological terms of 'immunity' and 'non-immunity' to injurious outer influences (*op. cit.*, pp. 152-9).

Finally, the fact that innate tendencies are often the main cause of trouble, and present methods of treatment in such cases fail, does not prove that they cannot be curbed. It may mean that we have not yet discovered the right kind of treatment for such cases. The proper course is to continue to experiment and in particular to deal with as many aspects of the problem as possible - health, home, school, outside interests, and suitable employment.

CHAPTER XXXVI

MIND AND BODY

From time to time in this book we have referred to the influence of bodily conditions on mental processes. Some of such influences are matters of common observation; for example, the mental stimulation by drinking strong coffee, the various effects of alcohol at different stages of inebriation, the sedative influence of bromides and other sleep-inducing drugs. As to the influence of mental processes on bodily conditions, we have already seen that under hypnotic suggestion a strong pin-prick may not hurt at all; and that ordinary waking suggestion may banish fatigue.

I have, however, deliberately avoided giving in an early part of the book a general exposition of the relation between body and mind, or dealing in detail with the nervous system, though a few writers on psychology prefer to introduce the subject through such physiological studies. My reasons for this are several. First, because I concur with those eminent psychologists who have also been physiologists, and who hold strongly that psychology has its own independent point of view and methods, and that in the long run a fuller knowledge of mental processes will be reached by such methods than by approaching our studies from a limited physiological point of view. Even when known physiological facts are clearly connected with psychological facts, a knowledge of these psychological facts, discovered independently of the physiological approach, is still necessary. Sometimes indeed, as Janet said, the physiological explanations are 'only poorly made translations of the psychological observations'.¹ This does not apply to some relatively recent discoveries; for example, the physiological changes connected with some emotions, and the great influence of the endocrine glands on development and on some

¹ *Principles of Psychotherapy* (1925), p. 158.

innate tendencies and emotions, to which we shall presently refer. But the value of facts as to normal physiological processes for explaining higher mental processes is slight. Thus one of the leading present-day authorities on neurology writes:

'In spite of . . . the advancement which has been made in the study of nervous structure, it is doubtful that we know anything more about the mechanism of *learning* than did Descartes when he described the opening of the pores in the nerves by the passage of animal spirits.'¹

Physiological and anatomical facts are of essential importance for the understanding of the special senses – of sight, sound, touch, and so on, and for the understanding of reflexes. But in a book like this, primarily for those concerned with education or with social life, we have not thought it necessary to deal with these particular topics, except incidentally.

A final reason for not attempting a full discussion of the relation of body and mind is that ultimately it is a problem for philosophy; as we shall see more clearly later, there are at least four rival theories.

Fortunately for the purpose of psychology we need not wait for these metaphysical problems to be settled. As psychologists we are concerned with mental experience and with behaviour, and we find usually that the direct study of mental processes is the most useful; but at times we find that, when noting certain physiological facts, e.g., the effects of drugs, or of brain injury, or of abnormal glands, or of malnutrition, we can note also certain accompanying or succeeding mental changes. Sometimes by using our physiological knowledge we can then even bring about mental changes which we think desirable, as in the easing of depression by drugs or by electric shocks. We will then follow this procedure and approach some psychological problems from their physical aspect, beginning with some very general ones.

Physical conditions and early mental development. Do children from poor homes, inadequately or unsuitably fed, suffer permanent

¹ See article by K. S. LASHLEY in *The Handbook of General Experimental Psychology* (1934), p. 493.

nently in their mental development? This is a topic of obvious educational and general social importance which we have already touched on in Chapter XXXI, pp. 491, 2. Undoubtedly, as we have seen, children from homes of the lowest economic level, are, on the average, of lower intelligence than children from homes of higher economic levels. But that may well be because the parents in the poorer homes are, on the average, themselves of lower intelligence, as again we have reason to believe. We may recall that the leading American authority on infant development, Dr Arnold Gesell, after giving striking evidence that even diseases in infancy may have little permanent effect on mental development, concluded that Nature ensures a preferential treatment of the nervous system; and that among rachitic children he found very slight inferiority in mental development.¹ 'The nervous system, as a whole, is insulated from the rest of the body in a peculiar manner, and it has astounding precocity of growth.'²

We may recall, too, Dr Shepherd Dawson's wide inquiry in Glasgow, which showed that some forms of acute and chronic disease, enough even to cause long periods of absence from school, had little, if any, effect on intelligence. Generally it was only if the disease was in the brain or the ductless glands that intelligence was appreciably affected.³

Of course, as pointed out in earlier chapters, during the period of malnutrition one cannot expect a child's physical or mental activity to be at its best; and the desirability of a healthy body is a quite good enough reason for wishing that every infant child could have the best nourishment possible. We may agree that excessive malnutrition in the first few years may have serious mental effects. There seem good grounds for believing that malnutrition and illness need not invariably have permanent ill effects on the intelligence of the child. What the effects may be on temperament and personality is

¹ See *Infancy and Human Growth*, pp. 323 and 268.

² DR H. A. HARRIS Professor of Clinical Anatomy in the University of London, in his Memorandum in the Board of Education Report on *Infant and Nursery Schools* (1933), Appendix II, p. 228.

³ See *Intelligence and Disease* (Medical Research Council Special Report, Series No. 162, 1931, p. 51).

another big and complicated question, which needs careful investigation.

As to children of school age, I may quote again the distinguished anatomist just referred to above. Dr Harris writes:

'This period of consolidation from the age of seven to that of eleven, may be regarded at one and the same time as the opportunity for retrieving past errors of development and for preparing for the heavy demands necessitated by rapid growth during the third "springing up" period of puberty.'¹

As to the connexion between backwardness and physical conditions, I referred briefly in Chapter XXXV to Burt's reports in his book, *The Backward Child*. Here I may give more detailed findings. He makes the general statement that 'of all the physical characteristics noted in the backward groups, the most distinctive was what may be vaguely termed a state of general malnutrition. Both at London and at Birmingham nearly 30 per cent. seemed, to a greater or lesser extent, visibly ill-nourished'.² But Burt himself points out that it would be a superficial conclusion to infer that the backwardness was chiefly due to malnutrition. More careful analysis revealed three main groups of children:³

(1) A large number whose physical and mental retardation seems to be the double expression of an innate lack of vitality.

(2) A large group in whom 'the slow physical and mental development seems to be the result of disease or malnutrition during the first year or two of life, including the prenatal period'. These cases are often 'not easy to distinguish' from those in the first group.

(3) Retarded development due mainly to malnutrition or disease during the school period.

While recognizing that much could be done by special care of children during the pre-school period, Burt concludes that

¹ See his memorandum in the Board of Education Report on *The Primary School* (1931), p. 226. DR HARRIS emphasizes that fatigue and lack of concentration in an apparently ill-nourished child may be due primarily to lack of sleep (p. 249).

² *Op. cit.*, p. 174.

³ *Op. cit.*, p. 160.

'inherent backwardness in physical and mental development is in the main a two-sided expression of one and the same underlying factor – a congenital deficiency in what may be called the original developmental impetus of the child'.¹

The nervous system. It may be well now to outline briefly a few points about the nervous system, of special interest to psychologists.² The nervous system is divided into two main subsystems, the central nervous system and the autonomic (self-governing) system. The central nervous system includes the brain and the spinal cord, together with the nerves connected with these running to the special sense organs, not only of sight, hearing, and taste but of touch, temperature, and pain, each served by special end-organs in the skin. The nerves which convey the excitations – of touch, pain, etc. – to the brain, are called *afferent* nerves; those which convey to the muscles the impulse which causes their contraction are called *efferent* nerves.

In '*reflex action*' the responses are quite automatic. An unexpected pin-prick on the finger causes an instantaneous jerk away, without one having time to 'will' a movement: reflexes may even be unconscious, as in the activities of the stomach in response to the stimulus of food entering it. A frog, from which the brain has been carefully removed, can be made to scratch with one foot a spot on the other foot which is irritated by acid; the spinal cord acts as an effective centre. In the intact human organism, however, the brain may play a part even in the reflex actions, in that many are conscious, and some are controllable to some extent, as in repressing a sneeze. Indeed, as one of the greatest authorities on the nervous system wrote, 'a simple reflex is probably a purely abstract conception because all parts of the nervous system are connected together, and no part of it is probably ever capable of reaction without affecting and being affected by various other parts, and it is a system certainly never absolutely at rest'.³

It is helpful to consider the nervous system from the point of

¹ *Op. cit.*, p. 123.

² We shall mention only a few elementary facts. Students interested should refer to standard text-books by physiologists, such as HALLIBURTON or E. H. STARLING.

³ C. S. SHERRINGTON, *The Integrative Action of the Nervous System*, p. 7.

view of evolution.¹ The oldest level is the spinal cord, with the simplest functions; it is almost the only nervous system in the lowest vertebrate animals. The second layer is the 'mid-brain', including the cerebellum and 'basal ganglia'. This is a substantial part of the brain of higher fishes and amphibians. The highest level (or 'layer', to use McDougall's word) consists of the cerebral hemispheres, the outer part of which is the greater part of the brain in man, but appears in the higher mammals, especially apes.

'All the evidence regarding the functions of these anatomical layers converges to show that each higher layer modifies and controls the functioning of the lower layers, without superseding those functions. By the administration of drugs, such as chloroform and ether and alcohol, the functions of these layers seem to be abolished in the order from above downwards. Under increasing dosage of such drugs, a man shows first some impairment of the highest functions of mind and brain, loss of critical self-consciousness and impairment of judgement and reasoning; the fourth layer is progressively put out of action, until he lives at the level of one of the higher animals - utilizing only the three lower levels; he lives, for the time, a life of sense-perception and uncontrolled affective responses. At a further stage, his sensori-motor functions are impaired; though he can still be stirred to outbursts of crude and violent affective response, during which he must be admitted to be conscious in a low indiscriminating fashion (comparable to the responses of a lower vertebrate animal to sense-impressions). At a third stage, he lies unconscious, his life processes sustained and regulated by only the first or lowest layer of the nervous system. If the dose of the drug is pushed beyond this point, the functions of the first layer are gravely impaired, and the man dies, generally from arrest of the rhythmic working of heart or lungs.'²

¹ I summarize here or quote from W. McDougall's lucid description in his *Energies of Men*, Chapter XXII.

² *Op. cit.*, p. 320.

That highest level of the brain, called the 'cortex', is the area with which is intimately associated (in a way which admittedly we cannot understand) the consciousness of the sensations due to the stimulation of afferent nerves. An important function of the cortex is the control of the voluntary movements. It is also a vast storehouse of associations between impressions corresponding to sensations of all kinds, and it is the physical basis of ideas and their manifold interconnexions. Finally, it exercises some control over other parts of the nervous system specially concerned with emotional reactions, which are closely connected with a lower part of the brain, the thalamus (including the hypothalamus). This latter is especially the seat of impulses which give rise to involuntary expressions of emotions — trembling, weeping, uncontrollable expressions of anger, and so on. It is not unlikely that over-development or over-sensitivity of this part of the brain is the physical determinant, or one of the physical determinants, of a highly emotional temperament — perhaps of that factor of 'general emotionality' we referred to in Chapter XII, p. 147, which Burt labelled 'E'. We must not, however, regard these various parts of the brain in man as functioning separately. Some of the most recent researches in brain physiology indicate a more intimate relationship between them than a reader might suppose from a statement like McDougall's summarized above. As one authority puts it:

'Recent physiological enquiries have revealed that this relationship is not simply that of a higher cerebral level controlling or dominating a lower; on the contrary, the cortex and the subcortex are interconnected in so intricate a manner, and influence one another's activities so closely, that from some points of view, cortex and subcortex have to be treated as a single integrated organ.'¹

The thalamus, as the same author emphasizes (p. 39) is in some essential ways integrated with the cerebral cortex on the

¹ See the article on 'The Physiology of the Emotions', by PROFESSOR S. WRIGHT in *Modern Trends in Psychological Medicine*, edited by DR N. G. HARRIS (1948), p. 34.

one side; we have only to reflect that the mere thought of danger may stir up all the bodily accompaniments of fear. On the other side, the thalamus is connected intimately with that part of the nervous system called the autonomic (self-governing) nervous system, to which we must now refer.

The autonomic nervous system. This is biologically a more primitive part of the nervous system. It includes two parts (1) *The Sympathetic Nervous System*, of which the nerves run to the heart and lungs, and to certain special glands. When a dangerous or exciting situation is met the organism is so stimulated, with stronger heart-beat and quicker breathing, etc., that it is better fitted to fight or escape. This is done, however, at the temporary expense of the digestive system. Closely associated with the sympathetic nervous system is (2) *The Para-sympathetic System*, which has the contrary effect, quietening and restoring the organism.

We have not, even yet, finished with the complicated apparatus which is concerned with emotions, as we shall see directly.

Emotions and physiological changes. Experiments have shown that feeding a dog for a few minutes produces a flow of a certain amount of gastric juice. But if the dog is first made angry by the presence of a cat, and then fed, the flow of gastric juice is greatly reduced. Anger or distress at meal-times may have a similar effect on human beings. For example, one woman for some years complained of indigestion, and medical treatment failed to cure it. Careful inquiry then revealed that she always met her father at meal-times, and then he was extremely irritable and there was always a scene. She came to dread meals, and so the digestive process was always checked and she had great discomfort, which was thought to be due to an ulcer, wrongly as it proved when she was operated on.¹

When anger has the effect of disturbing the digestive process the action of the sympathetic system is reinforced by the *adrenal glands* (near the kidneys) which discharge a secretion (*adrenaline*) into the circulation and so intensify the bodily reactions.²

¹ R. D. GILLESPIE in *The Mind in Daily Life*, p. 136.

² That the adrenaline merely emphasizes the direct action of the sym-

This gland, like the sympathetic system, is roused by an emergency, and the ultimate effect of the adrenalin is to divert blood from the skin and the viscera to the brain, spinal cord, and muscles; the heart-beat is further stimulated, and the organism becomes more ready for vigorous effort. Painful emotions produce similar physiological changes and often, under civilized restraint, without the opportunity of physical expressions, which some think is a cause of marked feelings of frustration.

So prominent are bodily changes in some emotional states that long ago the psychologist William James maintained that emotions consist entirely of the sensations due to these bodily changes. We do not cry because we are sad, he said, but are sad because we cry. This theory was severely criticized on general grounds,¹ and recent experimental work has further undermined it (though to some extent it is being revived). Thus, by the injection of adrenaline, the physical concomitants of fear or anger have been produced – rapid pulse, trembling, and so on. Yet the subjects usually reported feeling only a vague excitement, rather than actual fear or anger, though some subjects maintained that they experienced genuine emotions.² During the week I was writing this chapter I had, one night (most conveniently), a horrible nightmare. I woke up suddenly and found that I had 'cold shivers' down my spine, far more marked than ever I had experienced during waking life. They continued in waves over my back for some time, during which I observed them with great psychological interest, but without

pathetic nervous system and is not essential for visceral emotional reactions is emphasized in the article on 'The Physiology of Emotions', by PROFESSOR S. WRIGHT (referred to above), p. 29.

¹ See G. F. STOUT's *Manual of Psychology* (5th edit., 1938), revised by C. A. MACB., p. 365. The theory is generally known as the James-Lange Theory.

² For a summary of results of such experiments, see articles on 'The Expressions of the Emotions', by C. LANDIS (*Handbook of General Experimental Psychology*), edited by CARL MURCHISON (1934), pp. 336, 337. Further evidence against the James Lange Theory is summarized in the article by P. BARD in the same *Handbook*, pp. 300 ff. An outstanding earlier work on emotions is W. B. CANNON'S *Bodily Changes in Pain, Hunger, Fear and Rage* (1929).

any continuing intense emotion of fear; though like some of the subjects of the experiment with adrenaline, I felt some resemblance to the general feeling of fear, and as though the genuine emotion could be more readily roused while these cold shivers were present.

It has been suggested that emotional 'moods' are due to the continued but milder action of the physiological correlates of the emotion. Burt makes the interesting suggestion that long-continued strain may exhaust the adrenal glands and so lead to symptoms of 'neurasthenia' or what is popularly known as 'nervous exhaustion'.¹

The endocrine glands. The reference above to the adrenal gland has already introduced us to the endocrine glands. The secretions of these glands are called 'hormones' (i.e., 'exciters'), and these are poured from the glands directly into the blood stream, so that they can very quickly affect the whole organism. They work in close conjunction with the nervous system and with one another; balance between them is probably important, but some results can be noted from extreme under- or over-development of individual glands which we will now consider.

The thyroid gland is situated at the base of the neck, on each side of the 'Adam's apple'. If this gland is extremely vigorous there is a general tendency to over-activity, over-excitement, and irritability; there is often a loss of weight and sometimes excessive anxiety. These symptoms can be produced experimentally by administering thyroid extract through the mouth.² When the symptoms are due to an enlarged thyroid gland they can often be relieved by an operation on the gland. There is evidence that emotional stress may stimulate the thyroid, and even cause its enlargement,³ and this in its turn increases the emotional reactions, thus causing a vicious circle. Deficiency in thyroid leads to almost opposite effects. There is sluggishness in mental activity, a lack of initiative and of concentration. Some-

¹ *The Subnormal Mind*, p. 230.

² It is notable that the effects vary in different persons. See D. K. HENDERSON and R. D. GLEASPIE, *Textbook of Psychology*, p. 415.

³ See PROFESSOR S. WRIGHT'S article on 'The Physiology of Emotions' in *Modern Trends in Psychological Medicine*, edit. by NOEL S. HARRIS (1938).

times the administration of thyroid extract is beneficial. One example was a woman whose treatment began at the age of sixty-five, when she looked like 'a bald and stupid old man', and who died at ninety-four 'the picture of a charming, lively, elderly lady'.¹ There is, however, no evidence that to a normal person any benefit can be gained by the administration of thyroid extract. Grave deficiency in this gland in an infant results in low-grade mental deficiency known as cretinism. This can sometimes be improved if the patient is given thyroid at a very early age.²

The small *Pituitary Gland*, between the brain and the roof of the mouth, seems to affect and co-ordinate the functioning of the other endocrine glands. If very deficient in childhood, bodily growth is checked, and the child remains a dwarf; if excessive, he grows to be seven feet or over, and there is premature sex development. Different degrees of activity of the gland have been thought to be associated with degrees of energy and forcefulness of personality, and some personality improvements have followed when persons suffering from deficiency of the gland have been treated with pituitary extract. But as the physiologist Mottram points out, it is not always easy to say how far such improvements are due to the gland extract, and how far to accompanying psychological treatment.³

The sex glands, or gonads. We have already referred to the effects of the development of sex glands during adolescence in Chapter XXXIII (p. 537). As to their general influence, some characteristic differences between the sexes are usually attributed to the difference in the sex glands. In some animals transference of gonads has been known to produce characteristics of the opposite sex. Castration changes the fierce bull into a quiet ox. As to the influence of the sex glands in humans, the

¹ See *The Physical Basis of Personality* (1944), by PROFESSOR V. H. MOTTRAM. This book, in the Pelican series, gives a lively account of the functions of the endocrine glands and other physiological influences on personality.

² This treatment is not always effective; one authority suggests that hereditary influences may be the decisive factor. See *Mental Defect* (1933), by LIONEL PENROSE, p. 130.

³ *Op. cit.*, p. 66.

characteristics of eunuchs supply us with a clue. In addition to its effect on sex impulses, castration during adolescence or early adult life makes the eunuch relatively lacking in initiative and aggressiveness.¹ Subsequent injection of testosterone (a secretion of the male gonads) has been found to increase activity, initiative, and aggression.² There is evidence that the effeminacy of some men (possibly with homosexual tendencies) and the marked masculinity of some women are connected with deficiencies in the sex glands, and appropriate treatment sometimes has an effect; also that some cases of anxiety in homosexuals can be relieved by the administration of sex hormones.³

Summing up our discussion of endocrine glands, we may say that the evidence is clear that they may in some cases have a great influence on temperament; and that excess or marked deficiency may be grave handicaps, which can sometimes be relieved by medical or surgical treatment. For the vast majority of persons, however, even if some have certain impulses or emotions to a marked degree (or are very deficient in them), we have at present no evidence that these can be modified by endocrine treatment. It is possible, however, that individual differences in some of the innate tendencies and emotions are due to differences in endocrine endowment, and more especially due to differences in the *balance* and co-ordination of these endocrine glands, which co-ordination, however, still remains largely a mystery.⁴

The unity of the brain and nervous system. We have several times referred to the close interconnexion of the functioning of the various parts of the nervous system; thus, the cortex is linked with brain centres more immediately associated with emotional changes, and so with the autonomic nervous system. This is

¹ With older men (e.g., war cases) castration may have little direct physiological effect, but often profound mental effect, especially if they worry over impotence.

² See HOSKINS, *Endocrinology*, quoted by V. H. MOTTRAM, *op. cit.*, p. 86.

³ See G. M. RUDOLPH, 'The Experimental Effect of Sex-hormone Therapy upon Anxiety in Homosexual Types', *Brit. J. of Medical Psychology*, 1941, 28, p. 317.

⁴ We have not discussed some endocrine glands of apparently lesser importance, viz., the Thymus and the Pineal gland.

further closely linked with some of the endocrine glands, and the relationship between these glands themselves is perhaps more important than the particular strength of any one. This trend to regard harmonious interaction as supremely important is in line with the tendency in recent years to regard the cortex itself as less clearly divided into sections with specialized independent functions, than at one time was thought likely. There is clear evidence that certain parts are essential for sight, others for sound and the other sensations. Different parts of the muscular system are especially linked with special parts of the cortex, and there are parts called the 'association areas' which seem primarily concerned with linking sensory areas together. Recent researches, however, have shown that the cortex functions more as a unity, and sometimes, when one part is destroyed, its functions can be taken over eventually by another part, in a wonderful way. It looks as though the particular end or aim of the organism is an influential factor, rather than that individual automatic habits are set up dependent on regular brain tracts or associations of a series of particular brain cells, and man's actions solely the result of a system of chain reflexes.

Reflexes and purposive behaviour. A separate paragraph must be given to the magnification, by some physiological psychologists and by some 'Behaviourists', of the importance of reflexes in the interpretation of human behaviour. We have already seen in Chapter V the distinction between reflexes and instincts; there also we remarked that stimuli which have become closely associated with the object which normally rouses an instinctive urge may themselves directly rouse that urge. But the view that man's behaviour can be entirely explained as a system of linked conditioned reflexes leads to palpable absurdities. Consider, for example, the assertions of the high priest of Reflexology, Pavlov. Having pointed out the fact that some reflexes are complex, he goes on to label as reflexes such activities as the dog's 'guarding instinct'; even its craving for, and determination to get, freedom is a 'freedom reflex', and man's *purposiveness* is itself a reflex. 'Every one of us,' writes Pavlov, 'should cherish within himself this reflex as the most precious part of his being', and he urges that parents and teachers should seek to strengthen

it.¹ Is there then also a 'cherishing reflex'? But this cherishing reflex is also itself purposive, and so it looks like a reflex cherishing itself. Unless one denies entirely the possibility of conscious purpose influencing action (and Pavlov's own words seem to admit it), such uses of the term reflex are completely misleading.

'It is not a question of determination or freedom in human action. Even those who believe in complete determinism, require a different term, say "instinctive tendency", in which the main urge is from within, and is diverted toward a conscious end to be achieved, in which feeling tends to be roused, in which the ways of satisfaction are varied, and especially in which the actions are guided by intelligence and modified by awareness of success and failure. Even if in the categories of human action with all their complexity and with the gradualness of transition, *natura non facit saltum*, there would still be a need in psychology for terms which mark the main types of behaviour, in each of which one or two of various elements are relatively prominent, even if all the others are present to some degree. For the strict use of the term reflex, indeed, the presence of one element at least would exclude the term, namely, conscious adjustment of the mode of response to an end in view.'²

The approach to philosophy. The question of purposive action has led us close to the fundamental question of the relation between body and mind. When we plan an action, and decide to carry it out, there are no doubt physiological correlates to such a decision. Are these physiological correlates themselves the results of other physiological conditions, and so our volition all predetermined by material processes? Here we come back to those different views mentioned earlier, as to the ultimate nature of mind and matter. To the scientist of the nineteenth

¹ See PAVLOV'S *Lectures on Conditioned Reflexes* (London, 1928), p. 281.

² Quoted with some modifications from the chapter on Reflexes in my *Pivotal Points of Early Child-hood* (3rd edit., 1935), p. 17. In that chapter I have further discussed the distinction between reflexes and purposive, that is, active action. For a wider discussion of the problem, see M. D. LEBOWITZ'S *Outline of Psychology*, especially Chapter I, or his *energies of Men*, Chapter XXII.

century the material events seemed to present a closed system into which a mental event cannot enter as a cause; yet some scientists would regard mental processes as a by-product of the physical processes – mind being a mere ‘epi-phenomenon’.¹ Some philosophers would think such a view as difficult to accept as the view that mental processes may produce a change in matter. Some philosophers, indeed (the Idealists), have maintained that we can only be certain of the existence of mental processes, and that the material world is really the ‘phenomenon’. So we have the rival theories of Idealism, of Materialism (and Epi-phenomenalism), or of Dualism – the reality of both mind and body, and of *Interactionism* as the theory of their relation – the ‘common-sense’ view that the mind can affect the brain processes, and vice versa. Again, there is the view of *Parallelism* – that the mental and physiological processes proceed concurrently, corresponding in some close way, and yet never interacting.

Fortunately, as we said earlier in this chapter, psychologists need not wait for a solution of these profound metaphysical problems. Indeed, as one who was both a profound philosopher and a pioneer psychologist has written: ‘Even if material agency were the only real condition of mental occurrences, it would not follow that all psychological explanation must be physiological.’² As Stout goes on to say, ‘The very comparison of the mental phenomena with the physiological, presupposes an independent knowledge of both sides.’

The psychologist as such must leave these ultimate mysteries for the metaphysician. Yet it is a good thing for the psychologist to be reminded at times of these mysteries. For sometimes the psychologist, especially the very young and inexperienced, is apt to be over-confident in his view that psychology has made quite clear the deepest things of life; and too often he regards only the abnormal in mental life as something of a mystery, though in fact the ordinary events of our mental life are equally mysterious.

¹ Much of the old nineteenth-century scientist’s view of the nature of matter is, of course, out of date.

² G. E. STOUT, *Analytic Psychology*, 1902, 1, p. 4.

Throughout this book I have not hesitated to stress the limitations of our psychological knowledge, while emphasizing also that in the affairs of life we have so often to be content to base our actions on mere probabilities, and hence even a little knowledge may be supremely important.

As psychologists we can go on investigating our problems both by gathering purely psychological facts and by formulating principles, and by noting changes in mental processes in relation to known physiological facts. That we cannot as psychologists solve the metaphysical questions of the relation between mind and body need not disturb us. We may, indeed, make some contribution to that topic, and so help the philosopher in one part of his great range of problems. That range is, of course, wider than ours, for he has to consider the nature, meaning, and purpose of the whole universe. As a wit once put it, he is set one big examination question, 'Explain everything.' If we are incorrigible psychologists we may insist that in the study of man himself we are concerned with the most important and intriguing of the philosopher's problems, and we may agree with the poet Pope that '*the proper study of mankind is man*'. Certainly in the philosopher's wide range of vision, man himself holds a unique position. Though himself part of the universe which he studies, he himself has to do the studying, turning his mind in upon itself. He has also to decide between the true and the false, and he sets the standards by which he judges, not only truth but also moral or aesthetic values.

Yet while recognizing the greatness of man, the object of our studies, we must also recognize the limitations of his knowledge, admitting that he may never completely understand even himself; and we must admit failures in his search for truth and his struggle for advance. If we are wise, while recognizing the pathos in many such vain struggles, we shall also keep a sense of proportion, and even a sense of humour in our study of man—including ourselves. All of which is finely epitomized in those famous lines in which Pope sums up his estimate of man as:

'Sole judge of truth, in endless error hurried,
The glory, jest, and riddle of the world.'

APPENDIX

CORRELATION AND OTHER COMMON STATISTICAL TERMS

(1) *The finding of correlations and their uses.* The applications of statistics to problems of psychology and education have increased so much in recent years that it is important for the student to be able to interpret the meaning of statements about the degree of correlation between two orders or sets of marks. This can easily be done without any mathematical knowledge, and the simplest methods of calculating correlations can be grasped with a previous knowledge only of elementary arithmetic. Without even understanding the method of calculating correlations, the student can become familiar with the degree of correlation between various tests and orders, and so be able to judge roughly what a particular correlation figure (coefficient of correlation) signifies. Here is a list of actual examples, the coefficient being symbolized usually by r . The first three are theoretical examples which are practically never met with.

Between two identical orders	$r = 1.0$
Between two orders exactly the opposite of one another	$r = -1.0$
Between two orders such as one would get by taking two sets of numbers out of two hats — the resemblance given by pure chance	$r = 0.0$
Between the lengths of the two legs	$r = 0.97$
Between an arm and a leg	$r = 0.87$
Between two repetitions of a good intelligence test	$r = \text{about } 0.9^1$

¹ E.g., Terman Merrill individual tests gave a correlation between the two parallel sets of tests of about 0.9 among children of about average intelligence, and as high as 0.93 for mental defectives. See L. M. TERMAN and M. A. MERRILL, *Measuring Intelligence*, 1937, p. 47.

Between work in (a) Arithmetic problems and (b) Mechanical Arithmetic	$r = 0.76^1$
Between the orders of a Sixth Form of, say, thirty boys in the School Certificate Examination in Maths and the order of merit drawn up by the teacher of the same class	$r = \text{about } 0.75 - \text{on the average of many schools}^2$
Ditto in reference to English or History	$r = \text{about } 0.65 - \text{on the average of many schools}^2$
Between height and weight among men	$r = \text{about } 0.6$
Between the best group Intelligence tests among pupils selected for a Grammar School at 11+ and their position four years later	$r = \text{about } 0.5$
Ditto with the best type of Entrance Examination in Arithmetic and English at 11+	$r = \text{about } 0.5$
Between some of the worst types of Entrance examination for Grammar Schools of twenty-five to thirty years ago, and order of merit in the school four years later	$r = \text{about } 0.2 \text{ or } 0.3$
Between Handwork and Drawing ¹	$r = 0.5$
Between Handwork and Composition ¹	$r = 0.3$

The calculation of correlations. Suppose a master gives examinations in Algebra and Arithmetic to a class of boys. After marking the papers he may glance at the two orders of merit and say, 'They are practically the same.' Another examination

¹ C. B. R. T., *Distribution and Relations of Educational Abilities*, p. 72.

² See *Secondary Schools' Examination Statistics*, by J. M. CHAPMAN and D. C. JONES (1928).

in Geometry gives him another order, and again he may think, 'This looks practically the same as the orders in Arithmetic and Algebra,' and so he concludes that a boy who can do well in Arithmetic can also do well in Algebra and Geometry.

Such guessing from a cursory examination of orders, however, is dangerous, especially in a large class of thirty or forty pupils. The teacher is especially apt to be influenced too much by the fact that the top two or three boys in Arithmetic are also at the top in Algebra and Geometry, or that the same boy is bottom in all. By a simple calculation we can get precise estimates of resemblances between the various orders. An example will demonstrate this, and show on what the correlation figure depends. We take small numbers to make the example clearer.

First we arrange the pupils in order of merit in the Arithmetic examination, and then against each pupil we put his position in the Algebra examination, thus:

Pupils	Order in Arithmetic	Order in Algebra	Differences in orders for Algebra as compared with Arithmetic	
			Gains	Losses
A	1	2	-	1
B	2	1	1	-
C	3	3	-	-
D	4	8	-	4
E	5	7	-	2
F	6	6	-	-
G	7	5	2	-
H	8	4	4	-
I	9	10	-	1
J	10	9	1	-
Totals			8	8

We see that four boys have done better in the Algebra examination than in the Arithmetic, and four boys have done worse. (Clearly the number of places 'gained' must equal the losses, and this is a useful check on accuracy when we are dealing with large numbers.) These orders look very similar. But if we are to compare the resemblance between Arithmetic and Algebra, with the resemblance between Arithmetic and

Geometry, we must find the precise degrees of correlations. We will find the coefficient of correlation by the simplest method for the orders given above.

Spearman's foot-rule for correlations. The fundamental point to grasp is the fairly obvious one that the greater the total of the gains (or losses) in the orders, the less is the resemblance between the two orders. By a simple formula we can calculate a figure indicating the degree of resemblance between the orders. The formula is as follows:

R = the figure which indicates the degree of correlation. It is called 'the coefficient of correlation'. (R is used only when this foot-rule method is followed.)

n = the number of pupils in the class. (Here $n = 10$.)

Then

$$R = 1 - \frac{6 \times (\text{the sum of the gains})}{n^2 - 1}$$

In the example above, this works out as follows:

$$R = 1 - \frac{6 \times 8}{10^2 - 1} = 1 - \frac{48}{99} = \text{approximately } 0.5$$

Similarly, we could find the coefficient of correlation between Arithmetic and Geometry and compare the two results.

More exact methods of calculating correlations. Spearman's foot-rule has been used above because it is the simplest method and brings out the principles clearly; but it is not used now for purposes of research. The most frequently used method is based upon the differences between actual *marks* and not orders. That is what the letter r may be taken as usually indicating, unless otherwise stated. For that method I must refer the reader to one of the books mentioned below.¹ Sometimes, however, the letter r is used to indicate a correlation calculated by Spearman's more elaborate Method of Ranks, which we illustrate

¹ See GODFREY THOMSON's pamphlet, *How to Calculate Correlations* (Harrap, new edit., 1947), p. 8, on the 'Pearson Product-Moment Coefficient'. Also P. E. VERNON's book, *The Measurement of Abilities* (1940), p. 108.

below with the same orders as those used above. Originally, however, the Greek letter ρ (rho) was used for a correlation obtained by this method.

Pupils	Order in Arithmetic	Order in Algebra	Difference between the Orders (d)	Square of the Difference (d^2)
A	1	2	1	1
B	2	1	1	1
C	3	3	0	0
D	4	8	4	16
E	5	7	2	4
F	6	6	0	0
G	7	5	2	4
H	8	4	4	16
I	9	10	1	1
	10	9	1	1
				—
				44

Again, letting n indicate the total number of pupils, the correlation is given by the formula:

$$\begin{aligned}
 r &= 1 - \frac{6 \times \text{sum of } d^2}{n(n^2 - 1)} \\
 &= 1 - \frac{6 \times 44}{10(10^2 - 1)} \\
 &= 1 - \frac{0.264}{990} \\
 &= 1 - 0.27 \text{ approx.} \\
 &= 0.73
 \end{aligned}$$

It will be noted that this is larger than the coefficient given by the foot-rule method. Roughly the values of R up to about 0.5 should be increased by about a half, and between 0.5 and 0.65 by about one-third, to be comparable with values of r .¹

For the words 'the sum of' the Greek letter Σ (sigma) is regularly used, so that the above formula runs: $r = \frac{1 - 6\sum d^2}{n(n^2 - 1)}$

We must emphasize the fact that such calculations of correlations are very unreliable with numbers below about thirty, because of the likelihood of chance correlations. The degree of

¹ See C. SPEARMAN's article in *B.J.P.*, 2, p. 104.

reliability of a given coefficient is often indicated by stating the 'standard' or '*probable error*', which should not be more than about a quarter the size of the correlation coefficient, if that is to be regarded as proving a genuine relationship between the two orders or sets of marks. It should be noted that when a '*probable error*' is given it does not mean that the correlation coefficient is '*probably wrong*' by that amount.

Graphic example of a correlation. I give in Figure 10 a diagram with orders for two examinations which give a correlation of 0.88. It helps to show that, even with such a high correlation, there can be several big differences of position in a few cases. The orders are divided into three sections to show the changes more clearly. The arrows indicate the changes in positions of individual pupils.

The student should note that a correlation coefficient does *not* indicate the *percentage* of cases in which identical results are gain; or we may look at the matter in another way. Suppose we apply an intelligence test to try to predict success in an examination; then if among 100 pupils the prediction of success or failure (not orders) was correct in 88 per cent. of the cases the correlation would, in fact, work out at 0.75.¹

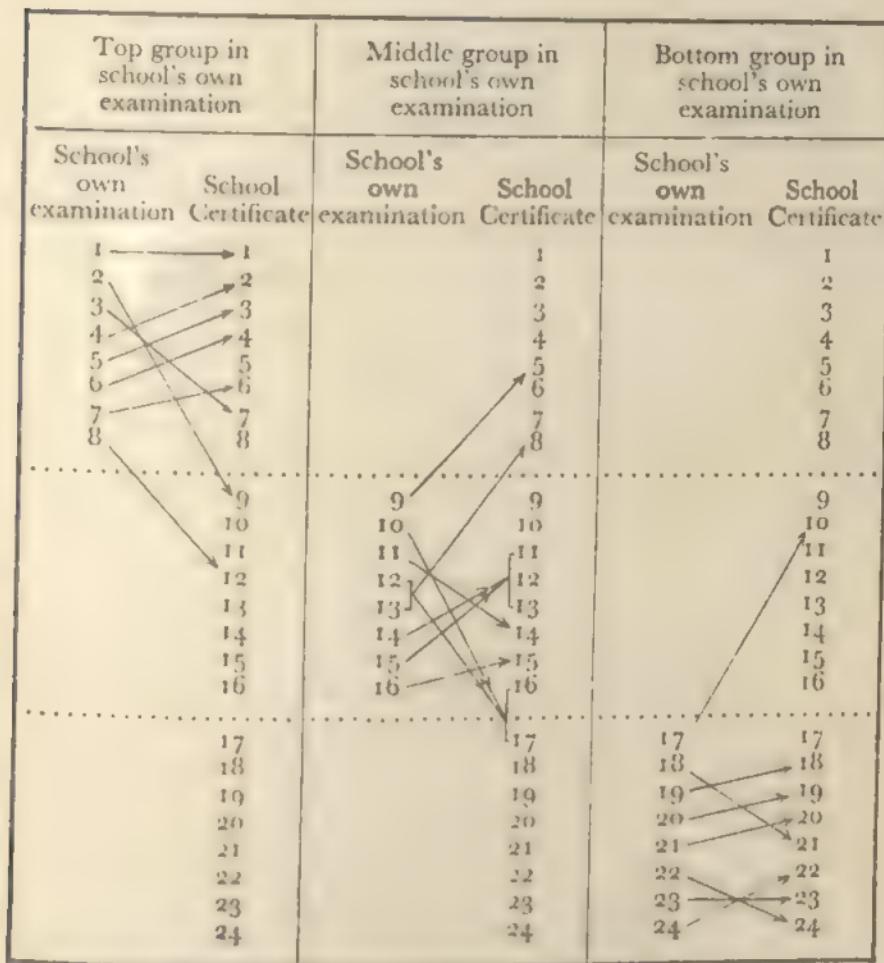
Common statistical terms. It is desirable that the student should be able to understand certain other terms commonly used in the statistical treatment of results in psychology and education, which he may meet in reading books and articles referred to in this book. Here we shall attempt only to explain the meaning of the most important terms, without always expounding methods of calculation.

The reliability or consistency of a test. The consistency of a test is naturally measured by the extent to which a repetition of the test gives the same results. This can be indicated by a correlation coefficient between the two sets of results. Unfortunately it has become customary for this to be called the *Reliability coefficient*, though consistency would be clearer.

Another way in which the reliability of a test is checked if the test contains a large number of items is by dividing it into two parts – one consisting of the odd-numbered items and the

¹ On this point, see P. E. VERNON, *op. cit.*, p. 137.

other of the even-numbered items – and finding the consistency of the results given by the two parts.



$$r = \sigma .88$$

FIGURE 10

EXAMPLE OF A HIGH DEGREE OF CORRELATION

Validity of a test. The term 'reliability' is ambiguous and suggests the extent to which one can rely on the test to indicate what it professes to – say general intelligence. This, however, is usually called the 'validity' of the test. If we use a test to

discover the aptitudes of a group of boys for, say, engineering mechanics, then suppose we are prepared to accept the employer's reports on them two years later as a sound criterion of aptitude, the correlation between the tests and the reports would show the validity of the test.

The curve of normal distribution. The student will sometimes come across a statement that the results of some test gave a

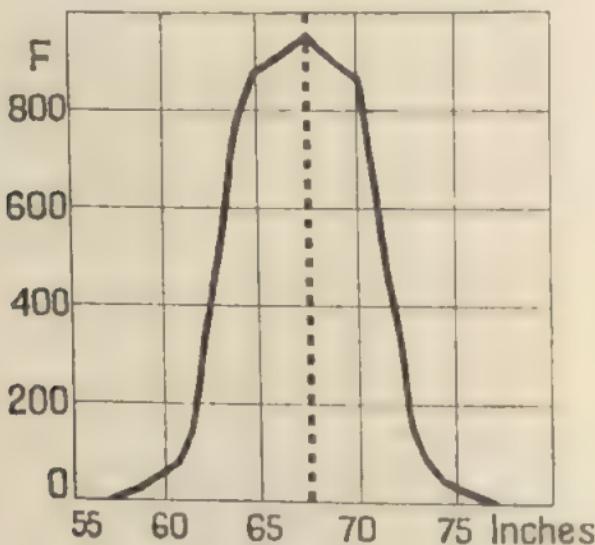


FIGURE 11
CURVE OF NORMAL DISTRIBUTION

'normal curve of distribution'; or a 'slightly skewed curve'. If we measure the heights of, say, 10,000 men taken at random and plot a curve showing the frequencies of the various heights, we get a curve like Figure 11¹ (see above).

This regular type of curve, with a high centre peak, and tapering gradually at each end, is also the kind of curve we may get by pure chance; for example, in tossing ten coins thousands of times and noting the number of times we get: (1) no heads and ten tails; (2) one head and nine tails; and so

¹ Adapted from P. E. VERNON'S *Measurement of Abilities*, p. 15, which was based on 6,194 men.

on. It is found that if sufficiently large numbers are taken, the results of very varied human measurements (height, weight, general intelligence, and specific abilities) give roughly similar curves to that in Figure 11 (see our graph for I.Q.s given in Chapter III, p. 41).¹

A skewed curve. Suppose, when our measurements of the height of 10,000 men were just begun a war broke out, and the Government conscripted first the fittest men, ages twenty to twenty-five, who were over, say, 5 ft. 5 in., and suppose we could not include these in our measurements. In a sample still taken at random this would reduce the number of men over 5 ft. 5 in. The peak in the curve would now be about 65 in., instead of about 67 in. as in the curve above, with a marked drop after 65. The curve would now be said to be 'skewed'; it would not be symmetrical. Similar results are obtained if we test thousands of children of twelve years in schools from which many of the more intelligent children have been removed to Grammar Schools at the age of eleven.

Thus the shape of a curve of results may be a warning of some selection or other error; but of course skewness, and indeed great irregularity, is likely to occur in any curve unless it is based on very large numbers.

Average and scatter. The curve in Fig. 12 shows how the average of two sets of curves or measurements may be about the same, and yet the scatter, or dispersion, very different.

We find this sort of curve for various kinds of test scores for males and females, males tending to show a greater scatter of scores than the females, though the average may be approximately the same.

Percentile scores. This is a convenient way of indicating where a particular child (or score) comes in a large group. If a test is applied, say, to a thousand children of ten years and the scores are arranged in order, then the score which comes a quarter the way down in this case, No. 750¹ is called the 'upper-quartile' score; the middle score is called the 'median'; the

¹ There are very slight variations from the normal curve in the figures for intelligence quotients. See VERNON, *op. cit.*, p. 21, and BURT, *The Backward Child*, p. 442.

one three-quarters down is the 'lower-quartile'. Or the order can be divided into 100 parts, and a boy one-quarter down described as being at the seventy-fifth percentile, and so on, or a person may be described as being in the top 2 per cent. of the general population or the bottom 10 per cent. This method of indicating performance in a test is being increasingly used

FREQUENCY

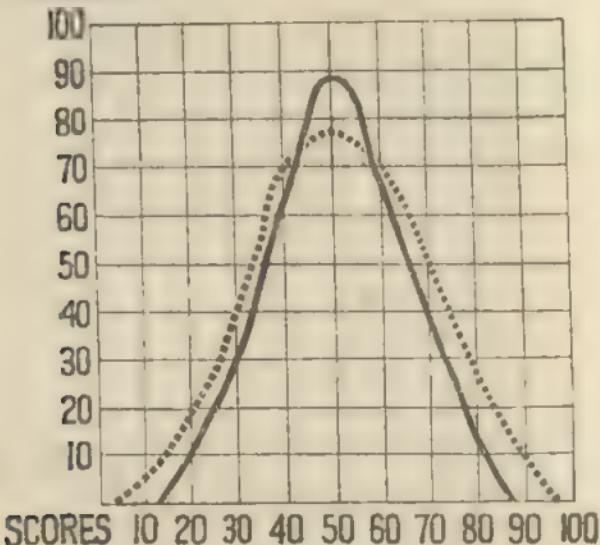


FIGURE 12

instead of referring to mental age, or intelligence quotient, especially for tests of adults.¹

The *Median* (middle score) is not the same as the average, which may be greater or less than the median. The term commonly used in statistics for 'average' is the *mean*. The *mode* refers to that score which occurs most frequently in a set of results.

Standard deviation. This is a term the reader will often meet in statistical records. It is another way of indicating the degree of scatter in a set of scores. Here is an example:

¹ See P. E. VERNON, *The Measurement of Abilities* (1940), p. 44 ff., and W. L. SUMNER, *Statistics in Schools* (1950).

Scores of Ten Boys in Arithmetic Test

	Max. 20	Deviation from the mean	Square of deviation
A	15	3	9
B	12	0	0
C	17	5	25
D	8	4	16
E	14	2	4
F	9	3	9
G	10	2	4
H	13	1	1
I	10	2	4
J	12	0	0
Total	120	Total 22	Total 72

Average or mean 12

Average deviation 2·2

Average of Squares 7·2

The method illustrated is as follows: All the scores are added, and the mean found; in this case twelve. Then the difference between this mean and each score is found; these are given in the column headed 'Deviation from the mean'. (The signs plus or minus are omitted.) Then each of these deviations is squared and appears in the right-hand column. It will be seen that this squaring gives much more weight to the bigger deviations — note particularly the twenty-five and the sixteen. The average of these squared deviations is now found — here 7·2 — and finally the square root of this average is calculated — here about 2·68. This is the 'standard deviation'. The standard deviation is usually symbolized by σ , and the formula for it is

$$\text{S.D. or } \sigma = \sqrt{\frac{\Sigma D^2}{N}}$$

when Σ indicates 'the sum of' and N is the number of cases concerned.¹

Standard score. The standard deviation is used in the most precise method of describing the performance of a person in a particular test. Thus, if a man's score is ten units above the mean, and the standard deviation is two, he may be said to have a score of five times the standard deviation (or +5). If

¹ On the standard deviation, see P. E. VERNON, *The Measurement of Abilities*, pp. 54 ff.

his score were ten units *below* the mean, he has a *minus* score, $-5\ldots$. By this means results from tests giving different means and scatters, and with different standard deviations, can be compared. In this country most intelligence and standardized education tests are planned to have a mean of 100 and a standard deviation of 15. Thus the results resemble the traditional I.Q.s, as shown in this table.¹

Score on test = I.Q.	Standard score
135	+2.3σ
115	+1.0σ
100	0
85	-1.0σ
75	-1.7σ

Standard error, and the significance of differences. The standard error is based on the standard deviation, and is an indication of the probability of a measure being the result of mere chance. The reader will meet the term often in discussions as to the *significance* of the difference between two averages – say that of men versus women in an intelligence test. The word ‘significant’ in such a context does not mean merely ‘worth noting’; it means that the probability of such a difference arising through mere chance is so small that it is not worth considering.

¹ For fuller table, with percentile equivalents, see W. SUMNER, *Statistics in Schools* (2nd edit., 1950), p. 32.

INDEX OF NAMES

ABRAMSON, J., 86
Adami, J. G., 540
Adams, J., 594
Adler, 89, 488
 quoted on self-assertion, 134
Alexander, S., 419
Alexander, W. P., 352, 353, 354,
 356, 359, 384, 385
Allen, E. P., 402, 414
Allport, G. W., 58, 137, 220, 359,
 361, 372, 376
 quoted on temperament, 65
Arnold, Matthew, 169, 471
Aveling, F., 96, 344

Bain, A., 261
Ball, H. R. V., 519
Ballard, P. B., 192, 250, 393, 465,
 475, 481
Bannister, H., 593
Bard, P., 615
Barker, R. G. 539
Bartlett, F. C., 230, 249, 258, 262
 quoted on perception, 22
Bazeley, E. T., 566
Beam, Laura, 116
Bell, S., 564
Bennett, E. M., 550
Berlyne, D. E., 334
Bibby, C., 125
Binet, 289, 312
Birch, L. B., 586, 588
Blackwell, A. M., 352
Bodkin, T., 434
 quoted on love of art, 446
Bodman, F., 592
Boney, C. De W., 494
Boring, E. G., 242
Bradford, E. J. G., 355, 384
Bradley, N. C., 511

Bridges, K., 504
Britton, J. N., 487
Bronner, A. F., 594
Brown, W., 15
Bühler, C., 186, 525, 550
Bulley, M., 437, 438, 441
Bullough, E., 454
Burt, C., 7, 27, 32, 34, 55, 58, 76, 91,
 133, 192, 241, 283, 321, 322,
 356, 358, 375, 430, 438, 539,
 581, 584, 594

quoted on:
 acquisition of skill, 266
 apprehension of complex ideas
 294
 backwardness and physiological
 factors, 610
 constancy of I.Q., 327
 defence mechanisms in chil-
 dren, 144
 drawing ability, 346
 factors of emotionality, 147
 general emotionality, 162
 innate factors in delinquency,
 60
 innateness of intelligence, 330
 intelligence levels in schools
 and vocations, 409
 interviews, 365
 judgements on pictures, 435
 juvenile delinquents, 599
 personality, 359
 popularity of school subjects,
 513
 prognosis of backwardness, 388
 school subjects grouped accord-
 ing to special abilities in-
 volved, 35
 selection for Grammar Schools,
 385

Burt, C. (*contd.*)
 quoted on:
 span of apprehension, 234
 stealing, 188
 temperament and performance tests, 372
 temperamental subnormality, 590
 the dull child's reasoning, 294
 types of temperament, 149
 verbal ability, 340
 vocabulary test, 313

Campbell, W. J., 399
 Cannon, W. B., 615
 Cantril, H., 92
 Carey, N., 15
 Carlyle, 423
 Carritt, E. F., 419, 423
 Carr-Saunders, A. M., 536, 597
 Cattell, R. B., 162, 337, 376, 411
 Chazan, M., 593
 Chinn, W. L., 598, 604
 Clark, H., 398
 Coleridge, 474
 Collins, M., 400
 Cook, Caldwell, 178, 182
 Cox, J. W., 274, 337
 Crampton, C. W., 537
 Croft, J., 395
 Crofts, J. M., 204, 391
 Crowther, G., 560
 Cullis, W., 538
 Culpin, Millais, 7
 Cummings, J. D., 490, 589
 Cunningham, M. A., 375
 Curti, M. W., 497

Daiches, D., 486
 Darwin, 299
 Davidson, M., 322
 Dawson, S., 492, 609
 Dearborn, W. F., 327
 Decroly, 183
 Dempster, J. J., 356, 384
 Dennis, W., 537
 Dewar, H., 430

Dickinson, R. L., 116
 Drever, J., 58, 165, 308
 Drew, G. C., 276
 Dunsdon, M. I., 600

Ellis, Havelock, 62, 113
 Emmett, W. G., 340, 379, 390
 Evans, H. A., 387
 Eysenck, H. J., 429

Feasey, L., 481
 Ferguson, T., 602
 Field, H. E., 370
 Fitzpatrick, T. F., 384
 Flack, W. S., 179
 Fleege, V. H., 412
 Fleming, C. M., 332
 Flugel, J. G., 133, 145
 Fox, C., 249
 Fraser, R., 7
 Freeman, F. N., 331
 Freud, S., 111, 123 ff., 193, 488
 quoted on interpretation of sex, 128
 Friedmann, S., 586
 Fryer, D., 407

Galen, 149
 George, W. R., 91, 130
 Gesell, A., 62, 488, 491, 492, 494, 502, 609
 (and Ilg, F. L.), quoted on personality changes in childhood, 525
 Gillepie, R. D., 228
 Gilman, B. I., 448
 Goodenough, F. L., 84
 Gosse, E., 474
 Gray, P. L., 327
 Green, J. A., 591
 Groos, K., 175

Haberlin, A., 525
 Hall, S., 282
 quoted on attitudes to teachers, 579
 Hamilton, W., 225

Hamley, H. R., 304, 370
 Hammond, G. M., 316
 Hargreaves, H. L., 96, 314
 quoted on fluency, 316
 Harris, H. A., 507, 538, 609
 Hartog, P., 365
 Hawkins, A. D., 402
 Hayward, F. H., 485
 Healey, W., 121, 594
 Hearnshaw, L. S., 343
 Hebb, D. O., 331
 Henderson, D. K., 228
 Henriques, B. L., 120, 126
 Hicks, W. R., 116
 Highfield, M. E., 532
 Hildreth, G. H., 438
 Hilgard, J. R., 493
 Hilliard, F. H., 550
 Himmelweit, H. T., 522
 Hirsch, N. I., 591
 Hitler, 137
 Holliday, F., 414
 Hollingworth, L., 62, 537
 Holman, P., 271
 Holzinger, K. J., 331
 Hopkins, K. D., 531
 Howard, M., 594
 Hughes, E. W., 603/4
 Hull, C. L., 260, 275
 Hunter, W. S., 272
 Husen, T., 329

Hilg, F. L. (and Gesell, A.), quoted on personality changes in childhood, 525

Ingham, J. G., 34
 Inhelder, B., 509
 Irion, A. L., 248, 277
 Irwin, Lord, 49
 Isaacs, N., 200
 Isaacs, S., 370, 489

Jack, J. M., 91
 Jahoda, G., 407
 James, W., 160, 615
 Quoted on genius and attention.

Janet, P., 142, 607
 Jenkinson, A. J., 480
 Jersild, A. T., 504, 543, 551, 564
 quoted on children's radio interests, 521
 John, C. W. St., 396
 John, Enid, 34, 322, 341
 Jones, D. Caradog, 204
 Jones, D. D. 391
 Jones, Ernest, quoted on the nature of children, 135
 Jones, Vernon, 374, 523, 530, 538
 Jung, 140, 141, 150

Kay, H., 258
 Keatinge, M. W., 102
 Keats, 535
 Kemp, L. C., 341
 Kerr, M., 373
 Kinsey, A. C., 555
 Kohler, W., 79, 308
 Koussi, A. H., 354

Lamb, H., 191
 Lambert, C. A., 384
 Lamborn, G., 474, 476
 Landis, C., 615
 Langfeld, H. S., 70, 242, 271
 Lashley, K. S., 608
 Lawrence, E. M., 38
 Leopold, K. B., 469, 483
 Lewis, E. O., 190, 512
 Lewis, H., 592
 Lingwood, J., 407
 Linton, R., quoted on anthropology, 68

Littlejohns, J., 437, 439, 445
 Lovell, K., 334
 Lyon, D. O., 249

Mabberley, A., 361
 Macaulay, E., 528
 Mace, C. A., 55, 276, 472, 615
 quoted on primitive societies, 67

Macpherson, S., quoted on musical education, 462

MacRae, A., 341
 McClellan, A. M., 496
 McClelland, W., 212, 383, 385
 McDougall, William, 7, 49, 55, 58,
 160, 194, 240, 557
 quoted on:
 brain and effect of drugs, 612
 extroverts and introverts, 150
 parent child relation, 142
 self-respect, 160, 161
 sympathy, 71
 McElroy, W. A., 429
 McGeoch, J. A., 221, 242, 248,
 275
 McGraw, M., 497
 McIntosh, D. M., 326
 McRae, H., 326
 Maddox, H., 331
 Mahone, H., 412
 Mainwaring, J., 345, 461
 Mannheim, H., 536, 597
 Marchant, J., 521
 Marsden, R. E., 327
 Marshall, H. R., 421
 Mason, C., 183
 Mead, M., 66, 68, 555
 Mellone, M., 347
 Mercer, E. O., 418
 Meredith, G. P., 304
 Merrill, M. A., 40
 Meyer, M., 456
 Miles, T. R., 331
 Miller, E., 140
 Miller, H. C., 7, 142
 Mills, C. C., 540
 Montessori, 181, 497
 Moore, V. J., 383, 384
 Moreton, F. E., 550, 554
 Morris, J. F., 558
 Mottram, V. H., 617, 618
 Murchison, C., 58, 615
 Murphy, G., 261
 Murphy, L. B., 109
 Myers, C. S., 5, 58, 230, 236, 249,
 412, 415, 452, 453
 quoted on primitive music, 458
 Myers, M. S., 550
 Needham, A., 437, 439, 445
 Newman, H. H., 331
 Norwood, C., 89
 Nunn, P., 27, 165,
 quoted on:
 imitation, 105
 play, 177
 teaching of mathematics, 284,
 285
 Oates, D. W., 359, 367
 Oeser, O. H., 430
 O'Gorman, M. B., 496
 Oldham, H. W., 352, 445
 Oliver, R. A. C., 370
 Olsen, W. C., 88
 Oppenheim, A. N., 522
 Ormiston, M., 217, 353, 359
 Parkhurst, H., 182
 Parry, J. B., 7, 354, 365, 374, 415
 Paul, St, 146
 Pavlov, 55, 619
 Pear, T. H., 27, 58
 quoted on:
 acquisition of skill, 270
 imagery, 252
 Peel, E. A., 92, 333, 356, 384, 445
 Peers, E. A., 476
 Penrose, L., 617
 Phillips, M., 548
 Philpott, S. J. F., 521
 Piaget, J., 104, 332, 498, 503, 508
 quoted on:
 children's attitudes to rules of
 a game, 527
 children's ideas of right and
 wrong, 527
 children's reasoning, 529
 children's understanding of
 numbers, 350
 Picasso, 440
 PinSENT, A., 532
 Plato, 309
 Pope, 622
 Prescott, F. C., 476
 Price, E. J. J., 354

Pritchard, R. A., 89
 quoted on attitudes to school subjects, 208

Puffer, E., 422, 431, 460

Rallison, R., 197

Rayden, M., 593

Reed, B. H., 564

Rhodes, E. C., 365, 536

Rhodes, E. M., 495

Richards, I. A., 471, 475

Rickman, J., 133

Ritchie, F. M., 403, 404, 556, 559

Rivers, W. H. R., 125

Rodger, A., 325, 384, 398, 412, 413
 quoted on choice of teaching profession, 416

Rogers, C., 593

Rogers, C. A., 316

Rolland, R., 451

Rotney, J. W., 328

Rudolph, G. M., 618

Ruskin, 423

Russell, Bertrand, 302

Sandiford, P., 331

Sandon, F., 585

Sawdon, E. W., 247

Schlosberg, H., 257

Schonell, F. J., 348, 395, 494, 585,
 586, 596

Scott, W., 238

Seashore, C. E., 22, 345

Sen, Amya, 374

Shakespeare, 476
 quoted, 22

Shakespeare, J. J., 47, 190, 202, 203,
 513
 quoted on popularity of school subjects among adolescents, 576

Shears, L. W., 552

Shelley, 310, 471

Sherif, M., 92

Sherrington, C. S., quoted on reflexes, 611

Shinn, M. W., 451

Sidgwick, H., 49

Simpson, J. H., 565

Simson, W. A., 573

Sleight, W. G., 16, 254

Slesser, G. E., 510

Smith, May, 7, 240

Smith, M. Drury, 272

Smith, Percival, 402, 414

Sparrow, W. J., 542

Spearman, C., 39
 footrule for correlations, 626

Spencer, H., 261, 334

Spielman, W., 365, 411
 quoted on temperament and performance tests, 372

Starbuck, E. D., 549

Starch, D., 42, 226, 243, 254

Stern, W., quoted on child's appreciation of nature, 424

Stewart, M., 520, 521, 571, 573
 quoted on adolescents and the cinema, 572

Stone, C. P., 539

Stout, G. F., 54, 58, 334, 472,
 615
 quoted on:
 primitive societies, 67
 volition and the idea of the self, 164
 physiology and psychology, 621

Stowe, L. Beecher, 91, 130

Sturt, M., 273

Sumner, W., 632, 634

Suttie, I. D., 110

Taylor, N., 484

Tenem, C., 409

Tennyson, 473

Terman, L. M., 40, 113, 540

Thomas, F. C., 15, 35

Thompson, H., 494

Thomson, Godfrey, 27, 321, 336,
 338, 361, 390, 626

Thorndike, E. L., 58, 189, 260,
 264

Thouless, R. H., 193

Tolman, E. C., 276

Unwin, J. D., 133

Valentine, H. B., 586

Vernon, P. E., 7, 38, 58, 276, 314, 326, 327, 329, 354, 356, 365, 373, 399, 415, 496, 630, 632, 634

 quoted on:
 backward readers, 586
 heredity factor in intelligence tests, 331
 personality tests, 374

Vince, P., 522

Wagner, 420

Wakelam, B. B., 335

Wall, W. D., 178, 424, 466, 536, 542, 547, 559, 568, 575

 quoted on:
 cinema and adolescents, 573
 newspaper reading by adolescents, 569

Wallas, Graham, 171, 196

Walters, E., 15

Ward, J., 154, 280, 281, 285

Warr, E. B., 196, 518

Watkins, S. H., 528

Watts, A. F., 289, 586

Webb, E., 162, 358, 366

Weld, H. P., 242, 271

Wheeler, O., 424, 466, 547

 quoted on aesthetic interests in adolescents, 578

Whipple, G. M., 15

White, E. E., 306

Whitehead, A. N., 302

Wilcockson, D. H., 398

Wilhelm, Kaiser, 136

Williams, E. D., 468

Wilson, M., 412

Winch, W. H., 426, 495

Wing, H. D., 345, 459

Winter, L., 468

Wiseman, S., 326, 384, 392

Woodrow, H., 257

Woods, J. M., 468

Woodworth, R. S., 227, 230, 255, 257, 276, 280

Wordsworth, 146, 423, 476

 quoted, 21
 on imagery, 476
 on unpopularity of poetry, 467

Wright, M. B., 329

Wright, S., 613, 615, 616

Wrigley, J., 326, 352

Zangwill, O. L., 22

Zazzo, R., 347

INDEX OF SUBJECTS

ABILITIES, group, 34
Spearman's two-factor theory, 320
special, 33, 339 ff.
special, and backwardness, 344
special, and Grammar School work, 340
special, in early childhood, 347
special, and interests, 343, 509
special, in selective secondary schools, 355

Ability, arithmetical, 35
general (innate), 319 ff., 330
(See also Intelligence)
general, and primary school work, 340
group: meaning of, 320
linguistic, 35, 36
manual, 35
number, 348 ff.
practical, 353
verbal, 34, 35, 348

Abnormal behaviour, difficulty of defining, 588

Absence from school, effects of, 584

Accuracy and speed in acquiring skill, 273

Achievement, influence of, on choice of school subjects, 203, 518

Adolescence, homosexual attraction in, 552
influence of sex maturation on, 538
instability of emotions during, 536
physical development at, 540
and religion, 548

Adolescents, aesthetic interests of, 577

Adolescents and the cinema, 572
and parents, 558
preference for school subjects, 574
and radio, 573
reading of, 567 ff.
and television, 522

Adrenal glands, 614

Advertisements, suggestion in, 97

Aesthetic appreciation, individual differences in, 434, 443, 447, 469
and intelligence, 468
training of, 441, 484

Aesthetic education, 444

Aesthetic experience, general nature of, 420

Aesthetic interests of adolescents, 577

Aesthetic judgements, general factor in, 430
of pictures, types of, 431
of poetry, types of, 482

Aesthetic preference, broadcast experiment on, 441

Affect, meaning of, 45

Aggressiveness, specific types of, 370

Algebra, attitude to, in Grammar Schools, 207

Anthropology, and innate tendencies, 66

Apperception, 20 ff.

Apprehension, span of, 233
of successive impressions, 235

Arithmetical ability, 35, 36

Arithmetic, attitudes to, in Grammar Schools, 206
new type test, 393
teaching of, 238

Army, use of intelligence tests in, 6

Art and sex, 419
 value of knowledge about, 445

Artist's skill, perception of, in aesthetic appreciation, 432

Association, importance of relations in, 245
 influence of recency and frequency of, 244
 law of, 244
 other terms for, 259
 word test, 8

Attainment tests and their uses, 393
 variations in successive years, 396

Attention, and acquirement of skill, 262
 different meanings of, 26
 experiment on, 222
 focus of, 232
 and interest, 219
 and musical appreciation, 459

Attention, span of, 233 ff.
 spontaneous, 218
 volitional, essentials for, 219 ff.
 training of, 223

Attitude tests, 376

Backwardness, causes of, 582
 prognosis of, 388
 specific types of, 585

Beauty, of form, 428
 meaning of, 419
 and pleasingness, 469 ff.

Belief and desire, 100

Binet tests, general factor in, 322

Body-mind relation, 620

Botany, attitude to, in Grammar Schools, 204, 208

Boy Scouts, 178

Brain, 612 ff.

Camp School, 179

Character, factor, in examination success, 353
 'W', 358

Character, meaning of, 161
 teachers' estimates of, 367
 tests of, 526

Character traits, estimates of, 362

Chemistry, attitude to, in Grammar Schools, 208

Child, average, at Infant School age, 502

Church attendance, and delinquency, 604

Cinema, and adolescents, 572
 and young children, 520

Citizenship, training for, 565

Claustrophobia, 125

Co-education, 114, 553

Cognition, meaning of, 45

Collecting, educational value of, 187
 frequency of, 186

Colour, aspects of, 426
 attitude to, affected by meaning, 427
 preferences, of infants, 426

Colours, experiments with, 426 ff.

Complex, the 'father', 139
 inferiority, 136
 the 'mother', 141

Complexes, measuring of, 125, 136

Comprehensive Schools, 357

Conation, meaning of, 45
 relation to feeling-tone, 45

Concepts, and concrete experience 282
 formation of, 280 ff.
 understanding abstract, 285

Concords and discords, discrimination of, by children, 454

Conflict, mental, 128

Conscience, 153

Consolidation, 250

Constructive tendency, 189 ff.

Conversions, 549

Correlation coefficients, examples of, 623
 graphic example of, 629
 meaning of, 14
 methods of calculating, 624

Crime, juvenile, 131, 596 ff.

Crowther Report, 560

Curiosity, in children, 195 ff.

Dalton plan, 182
 Day-dreams, 555
 Defence mechanisms, 143
 Definitions, teaching of, 285
 Delinquency, and adolescence, 536
 and church attendance, 604
 and innate factors, 605
 Delinquency (juvenile), frequency
 at various ages, 597
 and youth clubs, 604
 Delinquents, subsequent improvement of, 603
 Development, mental, intermittence of, 498
 and physical conditions, 608
 physiological basis of, 491
 Discipline, home, and delinquency, 601
 and problem children, 593, 594
 principles of, 595
 of the self-assertive, 138
 Discords, adaptation to, 456
 Disgust, 81
 Dissociation, 126
 Drawing, ability for, 346
 Dreams, 125, 309
 'Drives', 58

Educational quotient, 580
 Education, moral and religious, 97
 Ego-involvement, 92
 Emotion, meaning of, 49 ff.
 Emotions, general factor of, 147
 in infancy, 503
 James-Lange theory of, 615
 physiological changes in, 614
 sthenic and asthenic, 147
 sympathetic induction of, 71 ff.
 Emotional symptoms in infancy, 588
 Empathy, 432
 Endocrine glands, 616
 English, attitude to, in Grammar Schools, 205
 Environment, and adolescence, 554
 Error, probable, 628
 standard, 634
 Essay marking, 391
 Examinations, at 11+, 379 ff.
 character influence in, 353
 new type, 391
 Experiment, on apprehension, 233
 on distraction in mental work, 230
 on distributions of repetition in learning, 249
 on flow of ideas, 312
 on maze tracing, 268
 on imagery in reading poetry, 476 ff.
 on intuitive judgements, 363
 on learning poetry, 246
 on mental work and fatigue, 229
 on mirror drawing, 265
 on motor memory, 263
 on remembering, 254
 on transfer of training, 304 ff.
 on value of interviews, 364
 on volitional attention, 222
 with colours, 425
 Experiments, on imagination, 314
 on musical appreciation, 448
 Extravert, 20, 150
 'F' factor, 354
 Faculty psychology, 12 ff., 42
 Fatigue, experiment on, 229
 mental, and boredom, 227
 Fear, in infancy, 79
 Fluency, nature of, 315
 Forgetting, due to repression, 125
 rate of, 242
 Formal training, 27, 303
 Freedom in education, 181
 French, attitude to, in Grammar Schools, 207
 Friendship, sentiment of, 159
 'g', and mathematical abilities, 352
 musical abilities, 344
 practical ability, 354
 nature of, 39, 320
 Games, compulsory, 184
 Geography, attitudes to, in Grammar Schools, 206

Geometry, attitude to, in Grammar Schools, 207

Genius, and attention, 225

Gestalt psychology, 233, 246, 259, 275, 308

Glands, endocrine, 616

Gonads, 617

Grammar, and language, 290

Gregarious impulse, in adolescence, 55¹

Gregariousness, meaning of, 106

Group abilities, 35, 320

Habit, different meanings of, 29

Habits, erroneous ideas as to, 31
moral, 170

Handcraft, and intelligence, 33, 192
methods of teaching, 190

Handwork, and attitude to school, 192
popularity of, in schools, 190

Hedonism, 48

Heredity, 38, 331

History, attitude to, in Grammar Schools, 206

Home conditions, and juvenile crime, 598

Home environment, and problem children, 592

Homes, broken, and problem children, 593

Homosexual attraction, 115
in adolescence, 552

Hypnosis, 94

Hypnotism, use of, 8

Hysterical symptoms, 144

Ideals, of adolescents, 555
children's, 531

Imagery, of children, in reading poetry, 479
in listening to music, 449
and memory, 251
and poetry, 475
varieties of, 23

Imagination, constructive, 24
different meanings of, 23 ff.

Imagination, meaning of, 309
reproductive, 24
supposed training of, 25, 317

Imitation, primary, 102
purposive, 102

Impulses, checking of, 152 ff.

Incentives, to mental work, 226
in school work, pupils' and teachers' views on, 534

Individual differences, in acquiring skill, 267
in aesthetic appreciation, 430
in appreciation of music, 447
in innate tendencies, 60
in judgements on poems, 470, 471, 481
in retention, 242
in span of apprehension, 234

Individual methods, 182

Industry, value of psychology in, 4

Infancy, as a determinant of later character, 488
emotional symptoms in, 489

self-assertion in, 85
sociability in, 109

Inferiority complex, 136
feeling of, 137
feelings of, in adolescence, 546

Innate factors, and problem children, 591

Innate tendencies, conflict of, 151
in man, 58
modification of, 64
unification of, 153 ff.
recent American views on, 70

Instinct, distinguished from reflex, 54
meaning of, 53

Instinctive tendencies, essential qualities of, 56

Intelligence, and aesthetic appreciation, 468
distribution of, 41
general, evidence for, 32
meaning of, 319
innateness of, 330

Intelligence, maturing of, 328
 of the population, 338
 Intelligence quotient, constancy of,
 327
 Intelligence tests, improvements in,
 through practice, 326
 (See also Tests)
 Interest, and attention, 219
 and learning, 15
 and retention, 239
 Interests, and general ability, 214
 revealed by children's questions,
 196, 519
 and special abilities, 213
 Interview, improved technique for,
 365
 unreliability of, 364
 Introvert, 20, 150
 Intuition, 361

'K' factor, 354, footnote 1
 Knowledge and forming hypotheses, 309

Language, and grammar, 290
 and thinking, 287
 in infancy, 503
 Latin, attitude to, in Grammar Schools, 207
 prognosis of ability for, 341
 training through, 305
 Leadership, 91, 371
 desirable qualities for, 102
 Learning, and distribution of repetitions, 248
 how improved, 256
 by 'part-' or 'whole' methods, 246
 and practice effects, 253
 and testing, 248
 by trial and error, 263 ff.
 human, and animal experiments,
 275
 Libido, 133
 Libraries, reports from, 465
 Linguistic ability, 35, 36, 341,
 347

Logic, experiment with, 306
 and the psychology of thought,
 280
 Loneliness, 110

Malnutrition, 609
 Manual ability, 36, 340
 Marriage, and girls' choice of training, 417
 Mathematics, abilities for, 351
 teaching of, 284
 Masturbation, 113
 Maternal impulse, 75
 Maturation, 493 ff.
 Memory, and imagery, 251
 immediate and prolonged, 240
 in middle childhood, 507
 of movements, 263, 268
 rote and substance, 13
 'training' of, 16, 254
 visual and auditory, 13
 Mental age, explained, 39
 Mental defectives, 40, 337, 581,
 583
 Mental deficiency, testing for, 337
 Mental disorders, cure of, 7, and Chapter X
 Mental ratio, 40
 Mental work, experiments on, 229 ff.
 and 'nervous breakdowns', 228
 Method, of equal groups, 255
 trial and error, 263
 Moral education, and sympathetic induction of emotions, 73
 suggestion in, 99 ff.
 Moral habits, 170
 Moral sentiments, 168
 Moral training, 73, 170
 Morals, children's ideas as to, 527 ff.
 Mother, spoiling by, 141
 Music, abilities for, 344
 individual differences in appreciation of, 447
 value of history of, 463
 Musical appreciation, education in,
 460
 Musical intervals, attitudes to, 452

Nailbiting, 588
 Nature, appreciation of, by children,
 424
 beauty of, 422
 Nervous system, 611
 autonomic, 614
 para-sympathetic, 614
 sympathetic, 614
 unity of, 618
 Neuroses, frequency of, 7
 Neurotic symptoms, in children,
 588 ff.
 New type examinations, 391 ff.
 Newspapers, read by adolescents,
 569
 Nonsense-syllables, examples of, 18
 Normal distribution, curve of, 630
 Norwood Report, 214, 384
 Numbers, ability for, 348 ff.

Observation, 297
 of facts, prejudice in, 299
 and its training, 19
 Obsessions, 124
 Occupations, children's choice of,
 402
 children's ignorance as to, 403
 intelligence needed for types of,
 410
 reasons for choice of, 405
 Oedipus Complex, 111

Parental, ('protective') impulse, 75
 Parents, adolescents' attitude to, 558
 disharmony between, and problem
 children, 594
 Percentile scores, 338, 631
 Perception, 20
 Performance tests, *saw* Tests.
 Perseveration, 251
 Persistence, 358
 as a factor in school in success, 217
 Personality changes in childhood,
 523 ff.
 Personality defined, 359
 Personality traits, general and
 specific, 368

Philosophy and psychology, 620
 Physical conditions and mental
 development, 608
 Physical development, adolescents'
 interest in, 541
 at adolescence, 540
 Physical training, supposed effects
 of, 28
 Physics, attitude to, in Grammar
 Schools, 207
 Physiology and psychology, 607
 Psycho-analysis, 3, 125
 Psychology, definition of, 3
 practical uses of, 4
 prejudices against, 3
 Pictures, children's appreciation of,
 435
 effect of repeatedly seeing, 439
 types of judgement on, 431
 Pituitary gland, 617
 Play, biological function of, 175
 definition of, 173
 in infancy, 175
 methods in education, 178, 180
 Pleasure as a motive, 47
 Poetry, appeal of subject matter,
 479
 enjoyment of, by children, 481
 imagery, in appreciation of,
 475 ff.
 individual differences in judge-
 ment of, 469 ff.
 modern, experiments on, 486
 unpopularity of, 465 ff.
 writing of, by children, 483

Practical ability, 353
 Probation system, 603
 Puberty, age of, 113, 537
 Pugnacity, 83
 Punishment, childrens' ideas as to,
 531 ff.
 teachers' views on, 532, 533
 corporal, 532, 533

Questionnaire, use of, 544, foot-
 note

Questions, children's, 196 ff.

Radio, and adolescents, 573
 interests, of young children, 521

Rationalization, 145

Reading, of adolescents, 567 ff.

Reading interests, of young children,
 519
 (mechanical) test, 394

Reasoning, 280 ff.

Reasoning, training of, 301 ff.

Record cards, 396

Reflex, conditioned, 55
 distinguished from instinct, 54

Reflexes, 611
 and purposive behaviour, 619

Relations, apprehension of, 291
 grasp of, in infancy, 499

Reliability (consistency), of a test, 628

Religion, and adolescence, 548
 test of attitudes to, 376

Religious education, suggestion in, 101, 102

Remembering, mistakes in, 258

Reminiscence, 249

Repression, meaning of, 129

Rest-pauses, value of, 272

Retentiveness, 239

Retro-active inhibition, 250

Revision, distribution of, 248

Rhythm, fundamental nature of,
 457
 in poetry, 474
 in primitive music, 458

Rorschach test, 314, 373

Scatter, and average of scores, 631

School record cards, 396

School reports, 381

School subjects, fluctuations in performance in, 510
 popularity of, 201 ff.
 in Elementary Schools, 513 ff.
 in Grammar Schools, 203 ff.

Preferences among adolescents, 576

reasons for choice of arts or science, 212

Science, children's interest in, 197

Scientific method and training of reasoning, 301

Secondary Schools, selection for, 379 ff., 398, 399

Selection for Secondary Schools, suggested quota scheme, 381
 use of reports, 381
 of intelligence tests, 380, 382

Self, idea of, in decisions; experiment on, 166
 and volition, 164

Self-assertion, 85, 134
 excessive, 138
 individual differences in, 87
 in infancy, 85

Self-display, 87

Self-government, in schools, 565

Self-love, 160 footnote 2

Self-regard, sentiment of, 160

Self-submission, 90

Sensations of movement, 263

Sentiment, development of, 51, 156 ff.
 meaning of, 51
 of respect, 157

Sex, in adolescence, 112 ff.
 and art, 419
 attitudes towards the opposite, 114
 attraction, in adolescence, 116
 homosexual attraction, 115
 curiosity about, 111
 education, 119
 Freud's idea of, 132
 glands, 617
 impulses, individual differences in, 62
 in infancy, 111
 maturation, 112
 and nervous disorders, 4
 sublimation of, 132
 and youth clubs, 118

Significance of differences, 634

Singing, 360

Skill, individual differences in acquiring, 267

Skill, interest *v.* technique in acquiring, 267
 plateaux in acquisition of, 272
 transference of training in, 265, 273

Sociability, 107 ff.
 in infancy, 107

Social approval, 154

Social behaviour, in middle childhood, 523

Sociograms, 524

Sounds, pleasingness of, 452

Special abilities: *see* Abilities.

Standard deviation, 632

Standard scores, 633

Stealing, and acquisitive tendency, 188

Sublimation, 130 ff.
 of sex, 132

Suggestibility, of children, 98

Suggestion, contrary, 101
 experiments on, 95

Sympathy, active, 75
 appeal for, 77
 passive, 71 ff.
 specific nature of, 72

Tachistoscope, experiment with, 234

Teacher, influence of, on attitude to subjects, 210, 512
 value of psychology for, 1, 2

Teachers, adolescents' attitudes towards, 562
 desirable qualities for, 102
 influence of, 157, 183, 211
 and self-assertion, 89

Teachers' estimates, of character, 367
 of pupils, 381, 386
 of pupils' interests, 211

Teaching profession, reasons for choice of, 416

Technical High Schools, selection for, 383
 testing for, 359

Television, 522

Temperament, meaning of, 65
 tests of, 372
 types of, 149
 unstable, 151

Tests, of attitude, 376
 Binet, 321, 327 footnote 1, 334
 of character, 526
 completion, 293
 and education, 323
 effects of coaching, 326
 individual and group, 323
 ink-blot, 315
 of intelligence, in the Army, 7
 needed for backward children, 583, 585
 Moray House, 321 footnote 2, 325
 of musical abilities, 344

Performance, 354 ff.
 correlation of, with Binet tests, 336
 examples of, 334
 of reasoning, 293 ff.
 standardization of, 324
 uses of, 6

Valentine's, for six year olds, 321
 for Higher Levels of Intelligence, 98
 vocational, 413 ff.

word association, 8, 314

Thinking, different meanings of, 278
 and language, 287

Thyroid gland, 616

Transference, in acquisition of skill, 265, 273 ff.
 of training in reasoning, 301 ff.
 of supposed faculties, Chapter II

Twins, intelligence of, 330

Utility, and popularity of school subjects, 203

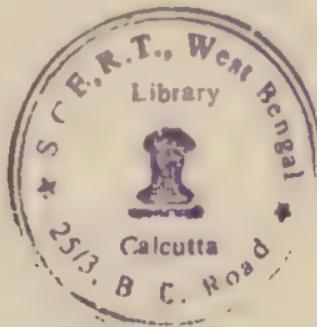
Validity, of a test, 629

Verbal ability, 35, 36, 347

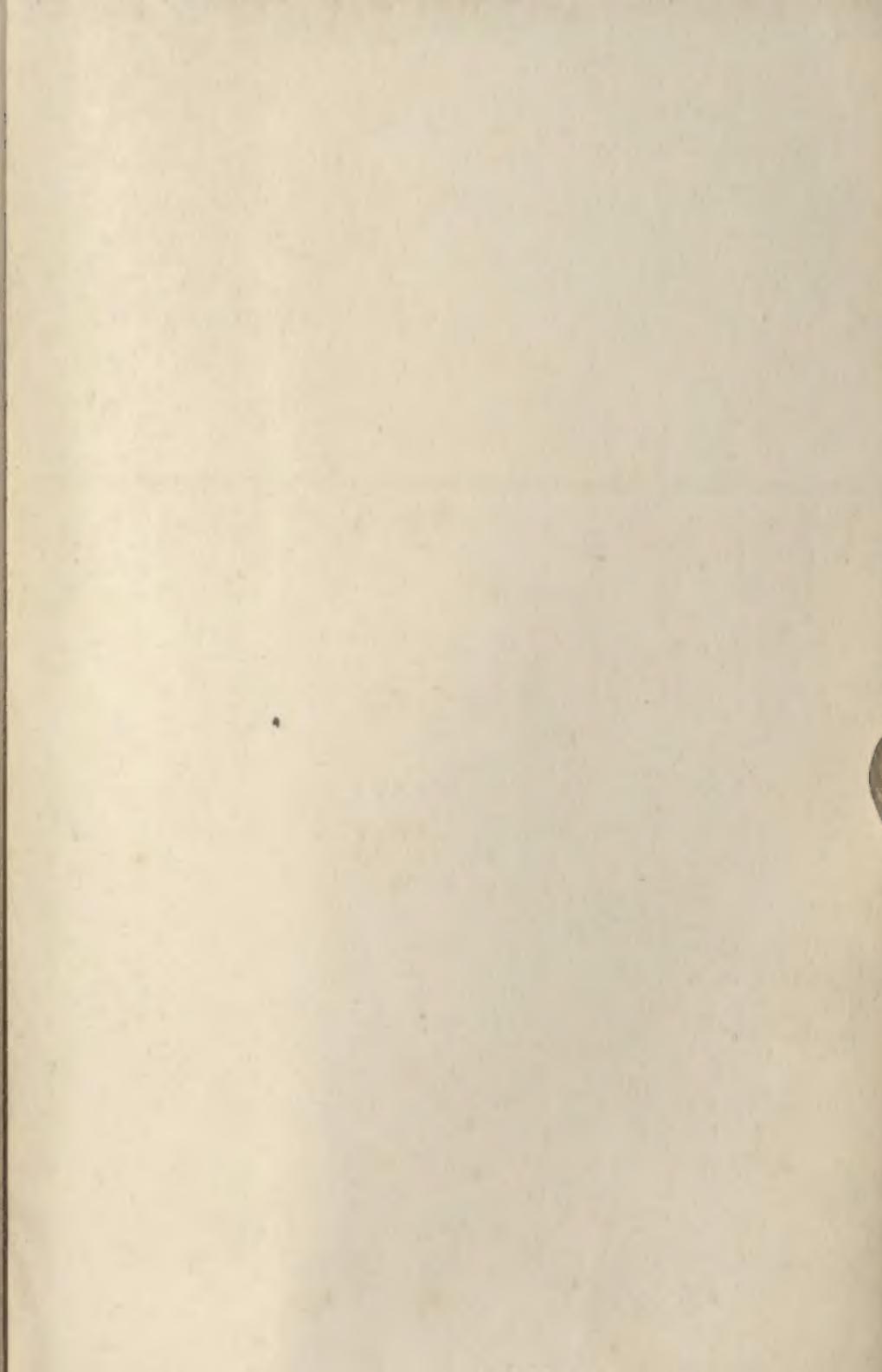
INDEX OF SUBJECTS

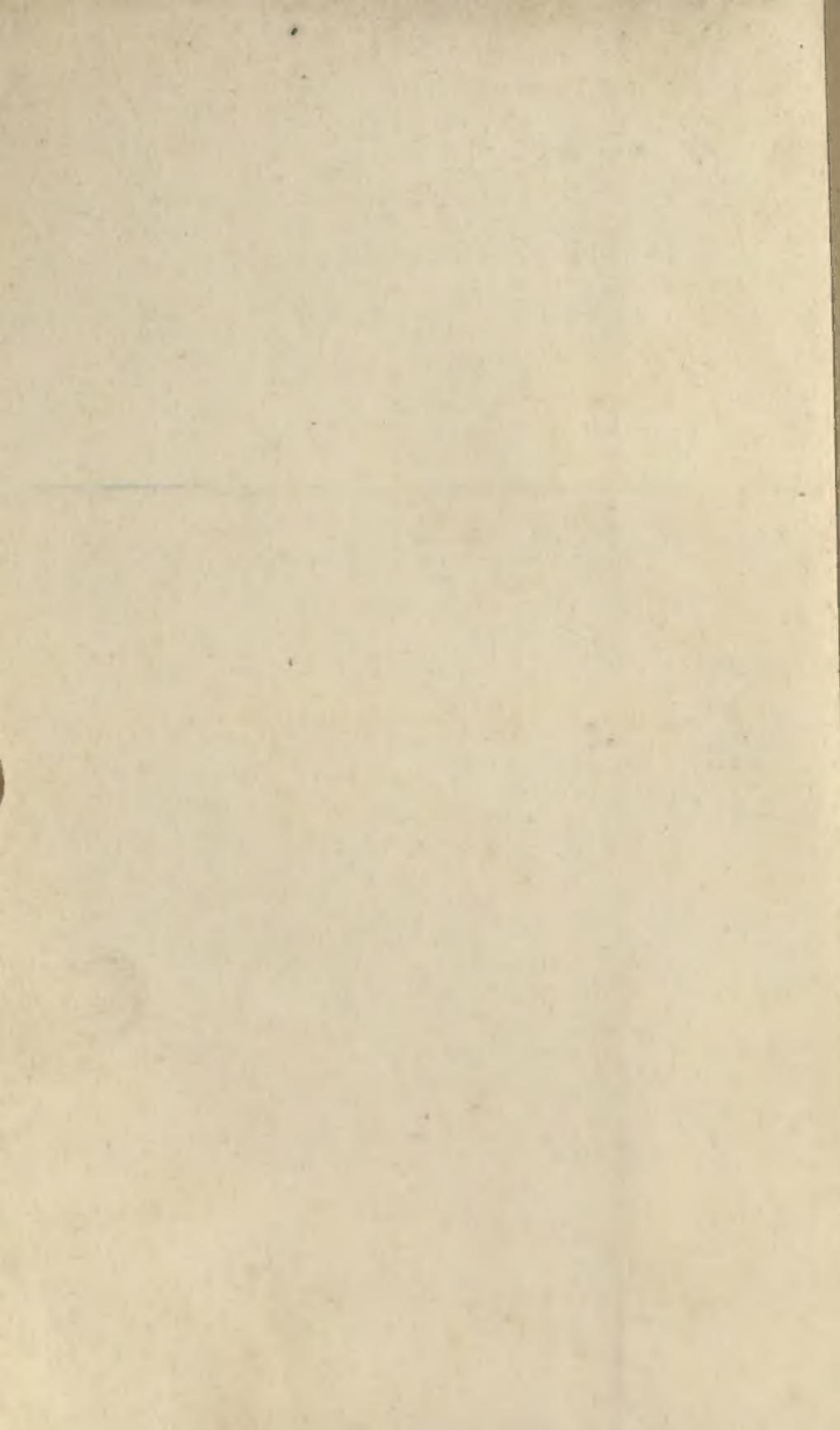
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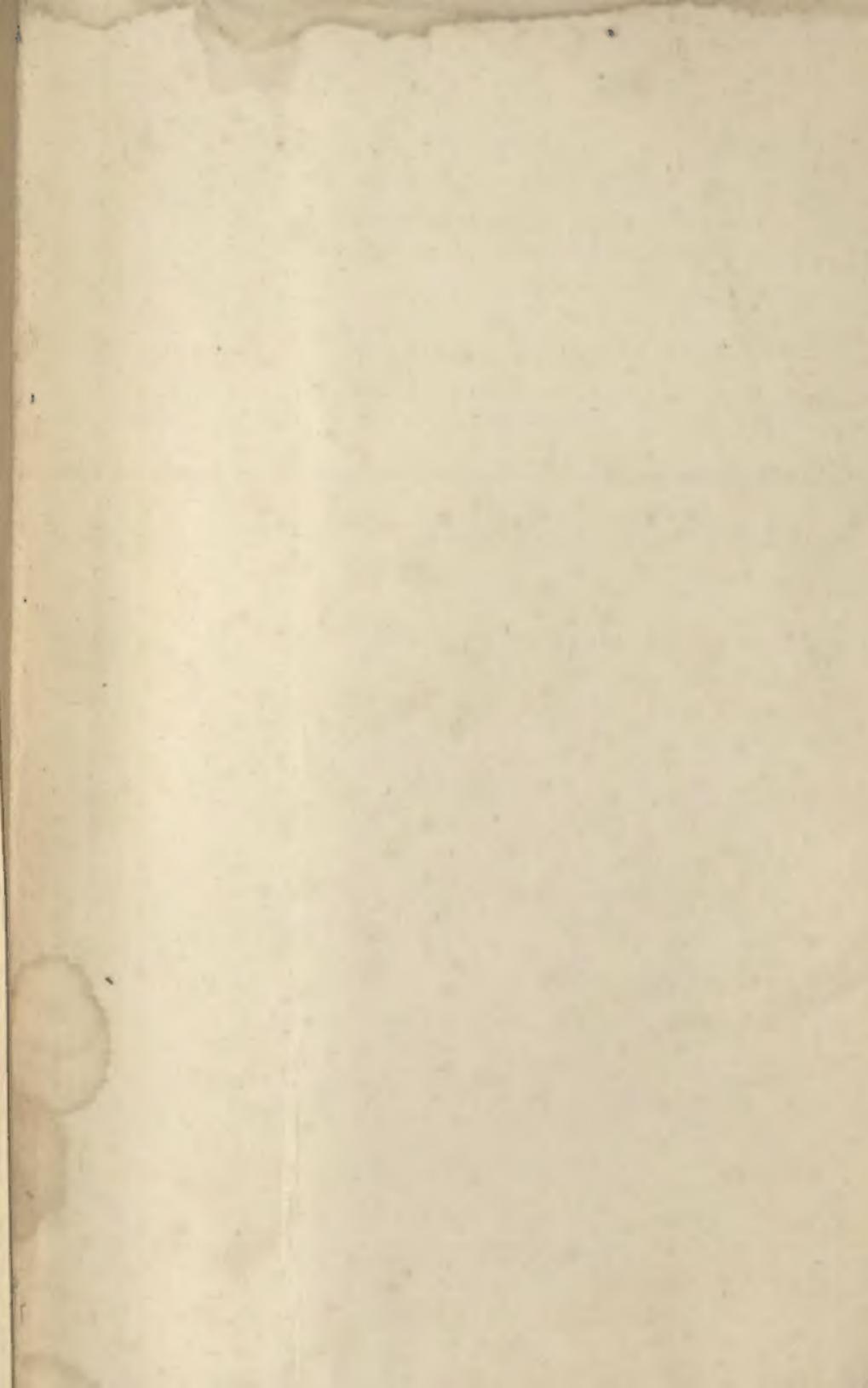
- Verbalism, 288
- Vocabulary, building of, 289
- Vocation, and attitude to school subjects, 202, 203
- Vocational guidance, the school's function in, 415
- Vocational selection, 413
- Vocational training, misplaced, 401
- Vocations, children's interest in, 199
- Volition, 162 ff.
- 'W' factor, 162
- War, and pugnacity, 84
- Will, meaning of, 169, 164
- Youth clubs, 564
and delinquency, 604











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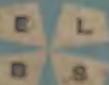
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